Degree Programme in Nursing

Academic Year 2026/2027

INTEGRATED COURSE (I.C.): GENERAL PATHOLOGY AND PATHOPHYSIOLOGY
NUMBER OF CFU (ECTS credits): 6
SSD (Academic Discipline Code): MEDS-02/B, MEDS-02/A, MEDS-03/A

COORDINATOR OF THE I.C.: Prof. Valentina Trapani
E-MAIL: valentina.trapani@unicamillus.org

CLINICAL PATHOLOGY – IMMUNOLOGY, IMMUNOHAEMATOLOGY
NUMBER OF CFU (ECTS credits): 2
SSD (Academic Discipline Code): MEDS-02/B
LECTURER: SILVIA CONSALVI
E-mail: silvia.consalvi@unicamillus.org

GENERAL PATHOLOGY - PATHOPHYSIOLOGY
NUMBER OF CFU (ECTS credits): 3
SSD (Academic Discipline Code): MEDS-02/A
LECTURERS: VALENTINA TRAPANI & EVELINA MIELE
E-mail: valentina.trapani@unicamillus.org; evelina.miele@unicamillus.org

MICROBIOLOGY AND CLINICAL MICROBIOLOGY
NUMBER OF CFU (ECTS credits): 1
SSD (Academic Discipline Code): MEDS-03/A
LECTURER: YAGAI BOUBA
E-mail: yagai.bouba@unicamillus.org

PREREQUISITE COURSES

Not applicable — no formal prerequisite courses are set by the Degree Programme Regulations for this teaching.

PREREQUISITES

Basic knowledge of applied physics, biochemistry, biology, genetics, histology, anatomy, and physiology is required.

LEARNING OBJECTIVES

The integrated course plays a fundamental role in the educational pathway of the Bachelor's Degree in Nursing, providing the biomedical foundations necessary to understand the mechanisms underlying the onset and progression of diseases, alterations in body functions, and their main clinical manifestations. The knowledge acquired provides a link between basic sciences, and clinical and nursing care disciplines, promoting the integration of theoretical knowledge with nursing practice. In particular, the course aims to:

- provide fundamental knowledge of the etiopathogenetic mechanisms of diseases and the resulting cellular, tissue, and functional alterations;
- develop the ability to understand pathophysiological processes and relate them to clinical manifestations;
- illustrate the fundamental principles of the immune response, its regulatory mechanisms, and its main alterations;
- promote the acquisition of skills for the interpretation of laboratory data and the prevention of infections.

The overall objective is to develop an integrated understanding of pathological processes and their manifestations, fostering the ability to link theory with nursing practice and thereby develop skills relevant to the prevention, early recognition, and nursing management of patients affected by diseases of different origins and nature. Overall, the course contributes to the development of an integrated view of the person and the pathological process, which is essential for informed, safe, and evidence-based nursing care, while providing the foundations for the acquisition of subsequent clinical, nursing care, and professional competencies.

EXPECTED LEARNING OUTCOMES

DD1: Knowledge and Understanding

At the end of the course, students are expected to have acquired knowledge and understanding of the main pathological, pathophysiological, immunological, and microbiological processes, with particular reference to conditions relevant to nursing care. In particular, students will be able to:

- describe the cellular and molecular mechanisms underlying the main pathological processes and alterations in homeostasis;
- understand the main mechanisms of the immune response and the immunopathological processes underlying diseases;
- understand the main pathophysiological mechanisms underlying diseases affecting different organs and systems and their clinical manifestations;
- understand the principles of clinical pathology and laboratory medicine, including the main diagnostic tests and their significance in the context of the most relevant diseases;
- know the main biochemical, haematological, and immunological reference parameters and their alterations in the main pathological conditions;

- describe the structural and biological characteristics and replication mechanisms of the main pathogenic microorganisms of clinical relevance;
- understand the main mechanisms of microbial pathogenicity, the modes of transmission of infections, and the mechanisms of the host response;
- know the principles of immunoprophylaxis, with particular reference to the characteristics and mechanisms of action of vaccines and immune preparations;
- understand the fundamental principles of microbiological diagnostics and the basis of microbial susceptibility and resistance to antimicrobial agents;
- understand the relationships between the etiological agent, host response, pathophysiological alterations, and clinical manifestations, developing an integrated understanding of the pathological process.

DD2: Applying Knowledge and Understanding

At the end of the course, students will be able to apply the knowledge acquired in general pathology, pathophysiology, clinical pathology, immunology, immunohaematology, and clinical microbiology to the understanding of the main pathological conditions and their relevance to nursing care. In particular, students will be able to:

- recognise the main signs and symptoms associated with pathological alterations and relate them to the underlying pathophysiological mechanisms, within the scope of their professional competencies;
- interpret the main clinical and laboratory data, relating them to the patient's physiological and pathological conditions and using them to support appropriate nursing observation and assessment;
- relate pathological and pathophysiological processes to the clinical progression of disease and to the main nursing care issues;
- apply knowledge of disease mechanisms to understand the monitoring, prevention, and care needs of individuals with different pathological conditions;
- apply knowledge of microbiology and immunology to the principles of prevention and control of healthcare-associated infections, in accordance with scientific evidence, guidelines, and professional best practices;
- use knowledge of immunohaematology to understand the principles of transfusion safety and recognise the main conditions that may require particular attention in patient care;
- integrate the acquired knowledge to understand the relationships between aetiology, pathogenesis, pathophysiological alterations, clinical manifestations, and nursing care needs, thereby providing the foundations for informed and appropriate nursing care.

DD3: Making Judgements

At the end of the course, students will be able to:

- critically assess signs, symptoms, clinical data, and key laboratory parameters, integrating knowledge of general pathology, pathophysiology, immunology, and microbiology to identify alterations in health status and potential risk situations;

- identify conditions requiring particular attention, monitoring, or prompt reporting to the appropriate healthcare professionals, supporting their assessments with the scientific knowledge acquired;
- assess the main infectious risk factors and adopt behaviours consistent with the principles of infection prevention and control and patient safety;
- develop a critical and informed approach to the assessment of clinical and laboratory information, recognising the limits of their own knowledge and the need for further investigation or consultation with other healthcare professionals;
- formulate appropriate and scientifically sound nursing assessments, integrating theoretical knowledge with the observation of the individual and the principles of evidence-based nursing practice.

DD4: Communication Skills

At the end of the course, students will be able to:

- communicate clearly, appropriately, and effectively information related to the main pathological, pathophysiological, immunological, and microbiological processes, using accurate clinical and scientific terminology appropriate to the recipient;
- accurately and systematically report signs, symptoms, nursing observations, and relevant clinical and laboratory data related to patient care, thereby promoting effective communication within the healthcare team;
- describe and explain the main aspects of pathological conditions and infection prevention procedures in a clear and understandable manner, adapting the language and level of detail to the characteristics and needs of the person receiving care;
- organise and synthesise scientific information from the disciplines covered by the course, both in oral communication and in written documentation, contributing to the continuity, appropriateness, and safety of nursing care.

DD5: Learning Skills

At the end of the course, students will be able to:

- independently pursue the acquisition and further development of knowledge in general pathology, pathophysiology, clinical pathology, immunology, immunohaematology, and clinical microbiology, making informed use of specialist textbooks, scientific sources, and databases;
- integrate knowledge from the different disciplines, relating pathological and pathophysiological mechanisms to clinical manifestations and their implications for nursing care, as a foundation for learning in subsequent clinical and professional courses;
- critically assess their own knowledge and competencies, identifying any gaps and developing strategies to address them;
- develop a commitment to continuous professional development, acquiring the ability to search for and critically evaluate new scientific evidence and to recognise its relevance to clinical and nursing practice and to patient safety.

SYLLABUS

Syllabus CLINICAL PATHOLOGY – IMMUNOLOGY, IMMUNOHAEMATOLOGY

- Clinical value of the laboratory tests
- Blood collection, fractionation, and storage
- Complete blood count (CBC)
- The immune response: characteristics and cellular or molecular effectors
- Immunopathologies and their diagnosis
- Immunohaematology and transfusion medicine
- Inflammation biomarkers
- Evaluation of haemostatic capabilities
- Diagnostics of anaemias
- Liver function tests and jaundice
- Glycaemia
- Lipaemia
- Renal function tests and urinalysis.

Syllabus GENERAL PATHOLOGY - PATHOPHYSIOLOGY

- Aetiopathogenesis: basic concepts (homeostasis, aetiology, pathogenesis, pathophysiology); chemical, physical or biological agents as aetiologic agents ; environmental and nutritional diseases.
- Cellular pathology: cellular adaptations (hyperplasia, hypertrophy, atrophy, metaplasia); cellular injury, reversible and irreversible cellular injury; cell death (necrosis and apoptosis).
- Inflammation: causes and signs of inflammation. Acute inflammation: circulatory changes, vascular changes, emigration of leukocytes, phagocytosis; different types of exudates. Mediators of inflammation. Systemic effects of inflammation. Chronic inflammation; granulomas. Healing and repair: tissue renewal, scarring, and fibrosis.
- Oncology: classification of tumours; biology of tumour cells; tumour progression and metastasis; causes of cancer; molecular basis of cancer ; hereditary cancer syndromes ; principles of antitumour therapy.
- Elements of pathophysiology of blood: anaemias, haemorrhagic disorders.
- Haemodynamic disorders: oedema, hyperaemia, haemorrhage, thrombosis, embolism, infarction, shock.
- Elements of cardiovascular pathophysiology: hypertension, atherosclerosis, cardiac failure.
- Elements of liver pathophysiology: jaundice, steatosis, hepatitis and cirrhosis; portal hypertension; liver failure.
- Diabetes mellitus: classification (type I, type II, gestational diabetes) ; pathogenesis and pathophysiology ; acute and chronic complications.
- Elements of renal pathophysiology: adaptations to renal damage; acute kidney injury; chronic kidney disease.

Syllabus MICROBIOLOGY AND CLINICAL MICROBIOLOGY

- Characteristics of the main infection agents. Vital associations: commensalism, mutualism, parasitism. Associated microbial flora. Generalities on infectious diseases: infectious ratio, infection and disease, endogenous infection, exogenous infections, opportunistic infections.
- The bacterial cell: structure and essential functions. Gram negative and Gram positive. The bacterial spore. Cultivation of bacteria: growth and development of bacterial populations. Elements of bacterial genetics: mutations and mechanisms of genetic recombination. Principles of pathogenicity and virulence. Bacterial toxins: exotoxins and endotoxins. Mode of action of the main antibacterial drugs. Resistance to chemotherapy and antibiotics. Examples of bacteria of medical interest and associated diseases.
- Nature, methods of study and classification of viruses. Composition and architecture of the viral particle. Cultivation of viruses. Virus-cell relationship: productive infection, transforming infection. Virus-to-host relationships: acute, persistent, latent, slow infections. Pathogenic mechanisms in viral infections. Vaccines and basis of antiviral chemotherapy. Examples of viruses of medical interest and associated diseases.
- Habitat and morphology of fungi (yeasts, mycelial fungi). Fungal cell structure. Examples of fungi of medical interest and associated diseases.
- The protozoa cell: morphology and structure. Main characteristics of Helminths and Arthropods. Examples of parasites of medical interest and associated pathologies.

COURSE STRUCTURE

The integrated course comprises a total of 84 hours of in-person classroom teaching, with 75% attendance required. Classroom teaching is divided as follows: 42 hours for the General Pathology and Pathophysiology module, 28 hours for the Clinical Pathology, Immunology, and Immunohaematology module, and 14 hours for the Microbiology and Clinical Microbiology module. Classroom activities will be complemented by multimedia presentations, continuous assessment tests, and interactive case-based exercises designed to foster active student engagement and ensure the full attainment of the course's learning objectives.

COURSE GRADE DETERMINATION

The integrated final examination, covering the three modules of General Pathology and Pathophysiology, Clinical Pathology, and Microbiology and Clinical Microbiology, is conducted as a written test consisting of 20–30 multiple-choice questions per module (1 minute allowed per question). Each correct answer is awarded one point, and the resulting score for each module is converted to a 30-point scale. The final grade is determined as the weighted average of the module scores, proportionally to their ECTS credits. To pass the examination, students must correctly answer more than 50% of questions in each module and achieve a minimum weighted average score of 18/30. For students who pass the written examination, the exam may be supplemented, at the student's request, by an oral examination aimed at improving the final grade. During the oral test, one question per module will be asked, and assessment will take into account mastery of the subject matter, ability to apply knowledge to complex problems, and clarity of presentation.

The written test directly evaluates:

- knowledge and understanding, through questions assessing mastery of theoretical content;

- the ability to apply knowledge and understanding, through situational or case-based questions.

Other competencies—judgment, communication skills, and learning ability—are assessed indirectly through the student's selection of correct answers and critical interpretation of the questions in the written test, or directly in the oral test.

The exams will be evaluated according to the following criteria:

< 18 insufficient	Significant gaps and/or inaccuracies in the knowledge and understanding of the topics. Errors in the application of knowledge. Inadequate presentation and inappropriate use of technical and scientific terminology (in the case of an oral examination).
18 - 20	Barely sufficient knowledge and superficial understanding of the topics, with possible inaccuracies. Uncertainty in the application of knowledge. Simple presentation and limited use of appropriate technical and scientific terminology (in the case of an oral examination).
21 – 23	Routine knowledge of the course content. Adequate ability to apply knowledge. Acceptable presentation of the content, with sufficient use of appropriate technical terminology (in the case of an oral examination).
24 – 26	Good knowledge and understanding of the topics. Fair ability to apply knowledge. Ability to present and discuss the content clearly and coherently, with good use of technical terminology (in the case of an oral examination).
27 - 29	In-depth knowledge of the topics, with strong analytical and synthetic skills. Ability to argue rigorously, with precise and appropriate use of technical language (in the case of an oral exam).
30 - 30L	Excellent mastery of the topics. Well-established ability to apply knowledge, with outstanding skills in analysis, synthesis, and making interdisciplinary connections. Ability to argue in an innovative and original way, demonstrating deep understanding of concepts and impeccable use of technical language (in the case of an oral exam).

Students with disabilities or certified Specific Learning Disorders (SLD/DSA) are entitled to compensatory tools and dispensatory measures (e.g., extra time, concept maps, equivalent assessment formats), to be agreed in advance with the lecturer and the relevant University office, without prejudice to achieving the same expected learning outcomes.

OPTIONAL ACTIVITIES

Students will be received at the end of lectures or by appointment arranged via email.

In addition to classroom teaching, students will have the opportunity to participate in thematic seminars, research internships, clinical ward internships, and specialized monographic courses. These supplementary

activities are intended to broaden the students' theoretical and practical training, but they are not subject to formal examination or evaluation.

READING MATERIALS

CLINICAL PATHOLOGY – IMMUNOLOGY, IMMUNOHAEMATOLOGY

- Damjanov, I., Perry, A. M., & Perry, K. Pathology for the Health Professions-E-Book. 6th edition, 2022, Elsevier.
- Laposata's Laboratory Medicine Diagnosis of Disease in Clinical Laboratory. 4th edition, 2025, McGraw-Hill Education.
- Slides and materials provided by the teacher.

GENERAL PATHOLOGY - PATHOPHYSIOLOGY

- Damjanov, I., Perry, A. M., & Perry, K. Pathology for the Health Professions-E-Book. 6th edition, 2022, Elsevier.
- Slides and materials provided by the teacher.

Reading materials for MICROBIOLOGY AND CLINICAL MICROBIOLOGY

- Cornelissen, C. N., Ram, S. Microbiology. 5th edition, 2025, Wolters Kluwer Health.
- Slides and materials provided by the teacher.