BSc in Nursing

INTEGRATED TEACHING: NURSING IN EMERGENCY MEDICINE AND SURGERY AND CRITICAL CARE
NUMBER OF CFU: 7
SSD: BIOS-11/A, MEDS-05/A, MEDS-24/C, MEDS-23/A, MEDS-06/A
RESPONSIBLE PROFESSOR: MANUELE CESARE
E-MAIL: manuele.cesare@unicamillus.org

MODULE: PHARMACOLOGY
NUMBER OF CFU: 2
SSD: BIOS-11/A
PROFESSOR: GIUSEPPE CARUSO
e-mail: giuseppe.caruso@unicamillus.org
Office hours: by appointment, in person or online, with time to be arranged

MODULE: INTERNAL MEDICINE – EMERGENCY MEDICINE
NUMBER OF CFU: 1
SSD: MEDS-05/A
PROFESSOR: NICOLA VERONESE
e-mail: nicola.veronese@unicamillus.org
Office hours: by appointment, in person or online, with time to be arranged

MODULE: NURSING SCIENCES – CLINICAL NURSING CRITICAL CARE
NUMBER OF CFU: 2
SSD: MEDS-24/C
PROFESSOR: MANUELE CESARE
e-mail: manuele.cesare@unicamillus.org
Office hours: by appointment, in person or online, with time to be arranged

MODULE: ANESTHESIOLOGY
NUMBER OF CFU: 1
SSD: MEDS-23/A
PROFESSOR: LORELLA PELAGALLI
e-mail: lorella.pelagalli@unicamillus.org
Office hours: by appointment, in person or online, with time to be arranged

MODULE: GENERAL SURGERY – EMERGENCY SURGERY
NUMBER OF CFU: 1
SSD: MEDS-06/A
PROFESSOR: CLAUDIO MISSAGLIA
e-mail: claudio.missaglia@unicamillus.org
Office hours: by appointment, in person or online, with time to be arranged

PREREQUISITES

No prior examinations are formally required to follow the course. However, students are expected to have a solid background in general and clinical nursing, as well as in basic sciences such as biology, biochemistry, physiology, anatomy, pathophysiology, semeiotics, and medical pathology. In addition, they should be familiar with the methods and timing of the main surgical procedures. For optimal learning, it is recommended that students have previously attended the integrated course of Nursing in Clinical Medicine, Surgery, and Pharmacology and successfully passed the related final examination.

LEARNING OBJECTIVES

Aim of the teaching is to:

- Provide advanced knowledge and skills for the early recognition, management, monitoring, and re-evaluation of critically ill patients in complex medical-surgical emergencies.
- Provide methodological competencies for the clinical, laboratory, and instrumental management of acute and life-threatening conditions in emergency and intensive care, including shock, coma, and multi-organ failure.
- Provide knowledge of invasive and non-invasive monitoring techniques, hemodynamic support, respiratory assistance, extracorporeal therapies, and perioperative intensive care.
- Provide expertise in the use of Early Warning Scores (EWS) and other tools for the timely identification of clinical deterioration.
- Provide skills for the management of pain, anxiety, and sedation in critically ill patients, with validated tools for assessment and continuous monitoring.
- Provide competencies for the safe administration of enteral nutrition and fluid therapy, including assessment, devices, drug–nutrient interactions, prevention and management of complications.
- Provide expertise in pharmacology, including pharmacodynamics, pharmacokinetics, therapeutic uses, contraindications, and adverse drug reactions, with focus on drugs commonly used in critical and emergency care.
- Provide knowledge of internal medicine emergencies, including syncope, arrhythmias, heart failure, acute coronary syndromes, stroke, pulmonary embolism, poisoning, trauma, epidemics, and disaster scenarios.
- Provide competencies for the recognition and management of specific acute conditions such as systemic anaphylaxis, acute intoxications, metabolic emergencies, and respiratory or cardiac failure.
- Provide knowledge and skills for surgical and perioperative emergencies, including trauma care, acute abdomen, damage control surgery, diagnostic approaches, and management of surgical complications.

- Provide expertise in anesthesiology, including preoperative risk assessment, airway management inside and outside the operating room, pain therapy, PACU care, and perioperative emergencies.
- Provide knowledge of rapid response systems, basic and advanced life support, recognition and treatment of dysrhythmias, and technical or pharmacological interventions during emergencies.
- Provide principles and practices of nursing documentation in critical and emergency care settings.
- Provide tools for effective communication with patients, families, and interprofessional teams in high-complexity and emotionally demanding contexts.

LEARNING OUTCOMES

Knowledge and Understanding

At the end of this teaching the student will know:

- The role, skills, and organization of the nurse in the critical care setting, and the principles for developing a nursing care plan in patients with high nursing complexity.
- The signs and symptoms of clinical deterioration, and the first-aid actions required to stabilize vital parameters and ensure survival in emergency situations.
- The clinical manifestations of the main diseases treated in emergency and intensive care, and the strategies and tools used to support vital functions.
- The principles of pharmacology, including pharmacokinetics, pharmacodynamics, mechanisms of action, therapeutic uses, contraindications, and adverse drug reactions of the main drug classes, with particular reference to those used in emergency and critical care.
- The nursing implications of pharmacological treatments and the role of the nurse in drug research and patient advocacy, considering gender, racial, and ethnic differences in drug response.
- The concept of emergency, the organization of the emergency department, and the principles and procedures of triage.
- The diagnostic and therapeutic approach to patients with acute conditions such as dyspnea, chest pain, shock, headache, altered consciousness, acute coronary syndrome, stroke, pulmonary embolism, deep vein thrombosis, respiratory failure, acute kidney injury, and glycemic emergencies.
- The principles of invasive and non-invasive monitoring, including techniques for peripheral and central venous catheterization, hemodynamic assessment, and intensive care unit management.
- The principles and practice of advanced cardiopulmonary resuscitation, rapid response systems, and interventions in trauma care and mass-casualty events.
- The fundamentals of recognizing and managing systemic anaphylaxis, acute intoxications, and other life-threatening conditions.
- The principles of surgical emergency management, including trauma, acute abdomen, perioperative nursing care, diagnostic pathways, and damage control surgery.
- The fundamentals of anesthesiology, including preoperative evaluation (ASA, Mallampati), airway management inside and outside the operating room, PACU care, perioperative emergencies, and pain therapy.
- The basic principles of effective communication with critically ill patients, their families, and interprofessional teams in high-complexity contexts.

Applying knowledge and understanding

At the end of the teaching, the student will be able to:

- Apply the acquired knowledge to deliver evidence-based nursing care in critical and emergency settings, using updated, clear, and effective approaches.
- Independently explore and deepen specific aspects related to the chosen professional field, integrating theoretical knowledge with clinical practice.
- Describe the fundamental features of the pathological conditions included in the program and relate them to the appropriate clinical and nursing care pathways.
- Evaluate the basic efficacy and potential toxicity of the main drug classes relevant to emergency and critical care.

Communication skills

At the end of the teaching, the student will need to know:

- How to communicate the principles of nursing in the critical care setting using specific and appropriate scientific terminology.
- How to use the specific scientific terminology in an appropriate manner.
- How to communicate with the patient about his / her skills in the field of diseases that require a surgical approach.
- How to present historical notes on pharmacology, basic principles of pharmacokinetics and pharmacodynamics of the main classes of drugs.
- Interfacing with anesthesiology staff and afferent to critical care medicine departments.

Making judgements

At the end of the teaching, the student will need to know:

- How to collect, evaluate, and interpret scientific evidence in order to select the most appropriate nursing interventions in critical care settings.
- How to assess the clinical condition of patients admitted to a general surgery department and make appropriate nursing decisions.
- The differences in efficacy and toxicity between drugs belonging to the same pharmacological class.
- How to formulate general and evidence-based conclusions regarding the topics covered in the course.

Learning skills

At the end of the teaching, the student will need to know:

- How to apply appropriate learning methods to strengthen and expand competencies in nursing within emergency medicine, surgery, anesthesiology, pharmacology, and critical care.
- How to use scientific literature, clinical guidelines, and evidence-based resources to update knowledge and support lifelong learning.
- How to integrate theoretical knowledge with clinical practice to continuously improve professional performance in high-complexity settings.

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COURSE SYLLABUS

Syllabus PHARMACOLOGY

- General principles of pharmacology.
- Pharmacokinetics and Pharmacodynamics.
- Nomeclature of drugs.
- Drug effects.
- General principles of toxicology.
- Nervous system drugs: Agonists and antagonists (nicotinic and muscarinic) of the cholinergic system; Sympathomimetic amines: α- and β-adrenergic agonists and antagonists.
- Central and peripheral nervous system drugs: Neuromuscular blockers; Local and general anesthetics; Anxiolytics; Hypnotics and sedatives.
- Cardiovascular system drugs: Antihypertensives and diuretics; Drugs for myocardial infarction; Antiplatelet, thrombolytic, and anticoagulant drugs.
- Anti-inflammatory, Antipyretic, and Analgesic Drugs: Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) Selective for COX-1 and COX-2; Antipyretics; Opioid Analgesics.
- Gastrointestinal drugs: Antiulcer drugs; Laxatives; Antidiarrheals; Antiemetic drugs.
- Principles of antibacterial chemotherapy: resistance, drug combinations, possible complications.
- Commonly used drugs in emergency situations: current use and future perspectives.

Syllabus INTERNAL MEDICINE – EMERGENCY MEDICINE

- Lipothymia and syncope.
- Shock.
- Heart failure.
- Arrythmias.
- Acute abdomen.
- Stroke.
- Bleeding.
- Poisonings.
- Traumas.
- Epidemics and pandemics.
- Disaster Medicine.

Syllabus NURSING SCIENCES – CLINICAL NURSING CRITICAL CARE

- Overview of critical care nursing: definition and evolution of the discipline; key competencies of the critical care nurse; role of professional organizations; care models in intensive care, including Primary Nursing.
- Patient and family response: impact of the ICU environment on patients and families; psychological and relational aspects; procedures and safety measures for intra- and inter-hospital patient transfers.
- Early recognition of clinical deterioration: use of Early Warning Scores (EWS) to identify and act upon clinical decline.

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- Comfort and sedation: assessment and monitoring of pain, anxiety, and sedation; validated measurement tools; management strategies; issues related to substance abuse.
- Fall risk in ICU: identification, prevention, and nursing strategies to reduce falls in critically ill patients.
- Enteral nutrition management: assessment of nutritional status in the critically ill patient; selection and care of enteral access devices; administration techniques; drug–nutrient interactions; prevention and management of complications.
- Fluid management: fluid balance principles; intravenous solutions and catheters; site care; infusion devices and monitoring; prevention of catheter-related adverse events.
- Hemodynamic monitoring: invasive and non-invasive modalities; arterial and central venous pressure monitoring.
- Ventilatory assistance: respiratory physiology and assessment; blood gas interpretation; oxygen therapy and devices; airway management including intubation, tracheostomy and suctioning; invasive and non-invasive mechanical ventilation; monitoring, complications, communication and weaning; pleural drainage and management of chest trauma.
- Rapid response and emergency care: rapid response teams; basic and advanced life support; recognition and management of dysrhythmias; electrical, pharmacological and technical interventions in emergencies.
- Documentation in critical care: principles and practices of nursing documentation in the emergency setting.

Syllabus ANESTHESIOLOGY

- Anesthesiological evaluation of the patient: ASA, Mallampati. Operative risk
- Role of the nurse in the operating room.
- PACU : postanaesthesia care unit.
- From the ward to the operating room and post-surgical intensive care: criteria for admission in ICU. OR to ICU handoff.
- Outline of Pain Therapy: rating scales, drugs, principles of therapy
- Airway management in the operating room.
- Airway management outside the operating room
- Guidelines: DAS, No trace wrong place
- Management of the brain-dead organ donor
- Emergencies in the operating room
- Latex allergy

Syllabus GENERAL SURGERY – EMERGENCY SURGERY

- Trauma and approach to the (poly)traumatized patient.
- Cranioencephalic trauma.
- Thoracic trauma. Rupture of the diaphragm. Mediastinitis.
- Abdominal trauma. Liver and spleen trauma. Renal and pancreatic trauma.
- Vascular trauma. Acute ischemia of the limbs.
- Shock.
- Acute abdomen: pathophysiology, history/objective examination, diagnostics, treatment.

- General acute abdomen pictures: peritonitis and intra-abdominal sepsis, bowel occlusion (mechanical ileus, paralytic ileus), hemoperitoneum and digestive hemorrhage, perforation, vascular occlusion.
- Specific acute abdomen pictures: esophageal perforation and caustic ingestion, perforated peptic ulcer, acute cholecystitis, acute pancreatitis, acute appendicitis, acute diverticulitis, intestinal volvulus, mesenteric infarction, ruptured aortic aneurysm.
- Principles of damage control surgery.
- Nursing framework of emergency surgical patients.
- Management of closed and penetrating chest injuries.
- Management of blunt and penetrating injuries to thoracic, abdominal and pelvic viscera, parietals and vasculature.
- Principles of damage control surgery.
- Principles of management of pelvic fractures and the management of fractures and dislocations of the limbs.
- Principles of diagnostic radiography (including interventional radiology), ultrasonography, computed tomography, magnetic resonance imaging and related techniques.
- Peri-operative management of medical co-morbidities in the emergency surgical patient including respiratory, cardiovascular, hepatic and renal disease, endocrine and psychiatric disorders.
- Techniques and technology of dissection, haemostasis, excision, resection and anastomosis used in emergency surgery.
- Pathophysiology and management of acute and chronic pancreatitis and their complications.
- Pathophysiology and management of peritonitis and intra-abdominal sepsis.
- Pathophysiology and management of obstruction, inflammation, infection and bleeding of the liver and biliary tree.
- Ascites. Mechanical and functional obstruction of the gastrointestinal tract.
- Aetiology, diagnosis and management of gastrointestinal tract perforation.
- Assessment and management of the acute presentation of malignant disease.

COURSE STRUCTURE

The module of Clinical Nursing Critical Care is structured in 28 hours of frontal teaching, divided into lessons of 2, 3 or 4 hours according to the academic calendar. Frontal teaching includes theoretical lessons and additional seminars on the topics covered.

The module of Pharmachology is structured in 28 hours of frontal instruction, divided into lessons of 2, 3 or 4 hours according to the academic calendar. Frontal instructions includes theoretical lessons and additional seminars on the topics covered.

The module of Emergency Medicine is structured in 14 hours of frontal teaching, divided into lessons of 2, 3 or 4 hours according to the academic calendar. Frontal teaching will be integrated by professional and elective activities.

The module of Anestesiology is structured in 14 hours of frontal instruction, divided into lessons of 2, 3 or 4 hours according to the academic calendar. Frontal instructions includes theoretical lessons and additional seminars on the topics covered.

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The module of Emergency Surgery is structured in 14 hours of frontal teaching, divided into lessons of 2, 3 or 4 hours according to the academic calendar. Frontal teaching includes theoretical lessons and additional seminars on the topics covered.

COURSE GRADE DETERMINATION

The exam of the integrated teaching Nursing in Emergency Medicine and Surgery and Critical Care is a single examination that covers all modules. It consists of a written test with 31 multiple-choice questions. The final grade, expressed out of thirty, will be determined collegially by the professors of the integrated course, taking into account the student's performance across all modules.

The exam will cover the main topics of the teaching modules and will be considered passed if the student scores a final mark of at least 18/30.

The knowledge and ability to understand, the ability to apply knowledge and understanding, the autonomy of judgment and the communication skills of the student will weigh in the final score as follows 30%, 30%, 30% and 10%, respectively.

The evaluation criteria considered will be: acquired knowledge, independent judgment, communication skills and learning skills. The exams will be assessed according to the following criteria:

< 18 insufficient	The candidate possesses an inadequate knowledge of the topic, makes significant errors in applying theoretical concepts, and shows weak presentation skills.
18 - 20	The candidate possesses a barely adequate and only superficial knowledge of topic, limited presentation skills, and only an inconsistent ability to apply theoretical concepts.
21 – 23	The candidate possesses an adequate, but not in-depth, knowledge of the topic, a partial ability to apply theoretical concepts, and acceptable presentation skills.
24 – 26	The candidate possesses a fair knowledge of the topic, a reasonable ability to apply theoretical concepts correctly and present ideas clearly.
27 - 29	The candidate possesses an in-depth knowledge of the topic, a sound ability to apply theoretical concepts, good analytical skills, clear argumentative clarity and an ability to synthesize
30 - 30L	The candidate possesses an in-depth knowledge of the topic, an outstanding ability to apply theoretical concepts, a high level of argumentative clarity, as well as excellent analytical skills, and a well-developed ability to synthesize and establish interdisciplinary connections.

OPTIONAL ACTIVITIES

In addition to teaching activities, students will be given the opportunity to participate in seminars, research internships, department internships and monographic courses. The topics discussed during the optional activities will not be asked during the exam.

READING MATERIALS

Reading materials for PHARMACOLOGY

- Burchum, J. R., & Laura D. Rosenthal, L. D. Lehne'S Pharmacology for Nursing care, 10th Edition, Elsevier (2019)
- Brunton, L. L., Knollmann, B. C. (2023). Goodman and Gilman's. The Pharmacological Basis of Therapeutics (14th ed.). McGraw Hill Education.
- Vanderah, T. W. (2024). Katzung's Basic and Clinical Pharmacology (16th ed.). McGraw Hill Education.

Reading materials for INTERNAL MEDICINE – EMERGENCY MEDICINE

- Bersten, A. D., Soni, N. (2015). Oh. Manuale di terapia intensiva (6° ed.). Elsevier Masson.
- Tintinalli, J. E., Ma, O. J., Yealy, D. M., Meckler, G. D., Stapczynski, J. S., Cline, D. M., Thomas, S. H., (2019). Tintinalli's Emergency Medicine: A Comprehensive Study Guide (9° ed.). McGraw-Hill Education.

Reading materials for NURSING SCIENCES – CLINICAL NURSING CRITICAL CARE

- Sole, M. L., Klein, D. G., & Moseley, M. J. (2020). Introduction to Critical Care Nursing (8th ed.). St. Louis, Mo: Elsevier.
- Badon, P., Giusti, G. D. (2022). Assistenza infermieristica in area critica e in emergenza. Rozzano, (MI): C.E.A. Casa Editrice Ambrosiana.

Reading materials for ANESTHESIOLOGY

- Professor's notes and slides.
- Stoelting's Pharmacology & Physiology in Anesthetic Practice – Pamela Flood et al., edited by Wolters Kluwer.
- Dubin, D. (2000). Rapid Interpretation of EKG's, Sixth Edition 6th revised.
- Web resources:
  https://cpr.heart.org/en/resuscitation-science/cpr-and-ecc-guidelines
  https://www.asahq.org/standards-and-practice-parameters
  https://www.sccm.org/SurvivingSepsisCampaign/Guidelines

Reading materials for GENERAL SURGERY – EMERGENCY SURGERY

- Divizia, A., Fiorani, C., Maggi, G., Romano, F. (2015). Compendio di chirurgia per le professioni sanitarie. UniversItalia.
- Giusti, G. D., Benetton, M. (2015). Guida al monitoraggio in area critica. Maggioli Editore.