



BSC IN MIDWIFERY

INTEGRATED COURSE: PHYSIOPATOLOGY OF HUMAN REPRODUCTION

SSD: MEDS-06/A, MEDS-24/B, MEDS-21/A, MEDS-24/A, MEDS-05/A, BIOS-11/A

Responsible Professor: [Giovanna Petrucci](#)

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Total credits: 7

Module: **General Surgery**

SSD: MEDS-06/A

Professor: [Tommaso Brancato](#)

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Number of credits: 1

Module: **General and Applied Hygiene**

SSD: MEDS-24/B

Professor: [Rita Lucchetti](#)

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Number of credits: 1

Module: **Gynecology and Obstetrics**

SSD: MEDS-21/A

Professor: [Barbara Costantini](#)

E-mail: barbara.costantini@unicamillus.org

Number of credits: 2

Module: **Medical Statistics**

SSD: MEDS-24/A

Professor: [Lorena Torroni](#)

E-mail: lorena.torroni@unicamillus.org

Number of credits: 1

Module: **Internal Medicine**

SSD: MEDS-05/A

Professor: [Luisa Petraccia](#)

E-mail: luisa.petraccia@unicamillus.org

Number of credits: 1

Module: **Pharmacology**

SSD: BIOS-11/A

Professor: [Giovanna Petrucci](#)

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Number of credits: 1

PREREQUISITES

To successfully follow the course, students should have an adequate background in biochemistry, cell biology, anatomy, physiology, general pathology, and the physiological changes occurring during pregnancy.

LEARNING OBJECTIVES

By the end of the course, students should be able to describe the main complications associated with the different stages of a woman's life, pregnancy, and birth control; the characteristics, signs, and symptoms of major surgical conditions; preoperative preparation, surgical risk factors, and postoperative complications.

Another objective is to identify the main internal medicine pathologies, their risk factors, clinical presentations, diagnostic approaches, and management strategies — with particular reference to women of reproductive age and to pregnancy-specific manifestations and mechanisms.

Students will also gain a solid understanding of public health, health promotion, and prevention (primary, secondary, tertiary), as well as the determinants of health. They will acquire basic epidemiological concepts, study designs, and knowledge of food hygiene and occupational health — with special attention to the prevention of biological risk.

The course also aims to equip students with tools for health education and literacy, enabling population engagement in health-related decision-making. Moreover, students will learn the basic statistical foundations required to design research, collect, and analyze data, as well as interpret scientific studies correctly using appropriate statistical terminology.

Finally, the course provides essential pharmacological knowledge in the areas of pharmacokinetics and pharmacodynamics, emphasizing how pregnancy modifies key pharmacological parameters. Students will also study specific drug classes such as anti-inflammatory agents (steroidal and non-steroidal), opioid analgesics, and gain introductory knowledge of endocrine pharmacology and contraceptives.

LEARNING OUTCOMES

The specific learning outcomes of the program are coherent with the general provisions of the Bologna Process and the specific provisions of EC Directive 2005/36/EC. They lie within the European Qualifications Framework (Dublin Descriptors) as follows.

At the end of this teaching, students will be able to:

Knowledge and Understanding

- Recognize and evaluate signs and symptoms of surgical risk factors and postoperative complications (e.g., phlebothrombosis, thrombophlebitis, local and systemic infections)
- Identify signs and symptoms of burns, frostbite, traumatic injuries, contusions, and fractures
- Assess wound healing and complications in tissue repair
- Recognize various types of shock and infections (e.g., tuberculosis, anthrax, amebiasis)
- Identify acute abdominal conditions and proctologic diseases (hemorrhoids, fistulas, prolapse)
- Describe the basic principles of hygiene and health determinants
- Explain the organization and levels of prevention
- Describe transmission and prophylaxis mechanisms of infectious diseases and the principles of vaccination
- Explain chronic-degenerative diseases and the role of genetics and environment
- Describe food hygiene and occupational health principles
- Explain the anatomy and main complications of the female reproductive system
- Identify main internal medicine diseases, their risk factors, symptoms, diagnostic and management approaches
- Correlate studied pathologies and their implications during pregnancy
- Recognize puerperal and postpartum pathologies and diagnostic procedures for proper management
- Explain clinical emergencies and how to address them appropriately
- Describe the structure of a scientific study and interpret its results
- Describe pharmacology, pharmacokinetics, and pharmacodynamics
- Explain drug interactions, teratogenesis, and changes in pharmacology during pregnancy
- Describe the classification, mechanisms of action, pharmacokinetics/dynamics, and side effects of steroidal and non-steroidal anti-inflammatory drugs, opioids, and endocrine agents (including contraceptives)

Applying Knowledge and Understanding

- Apply the principles of midwifery to selected cases, problems and a variable range of situations
- Use the tools, methodologies language and conventions of midwifery to test and communicate ideas and explanations

Communication skills

- Understand scientific language in written exams

- Present topics orally in an organized and coherent manner
- Use appropriate technical and disciplinary terminology

Making Judgements

- Recognize the importance of in-depth knowledge for professional midwifery training
- Acknowledge the relevance of theoretical knowledge for professional practice

Learnings Skills

- Undertake autonomous learning through the consultation of scientific literature

SYLLABUSGENERAL SURGERY

Etiopathogenesis, diagnosis, and surgical treatment of diseases; acute and chronic inflammation; surgical risk factors and postoperative complications; wound care, burns, frostbite, shock, tuberculosis, anthrax, amebiasis, lymphatic disorders, vascular diseases, and abdominal emergencies.

HYGIENE AND PUBLIC HEALTH

-Definition and purposes of General and Applied Hygiene: Evolution of the concept of health; health promotion and disease prevention; health education.

-Introduction to demography and epidemiology: Principles of demography and analysis of main health indicators (e.g. birth rate, fertility rate, mortality rate, infant, neonatal and perinatal mortality, etc.); definition of absolute and relative risk. General epidemiology of infectious diseases and of non-infectious chronic-degenerative diseases.

-Primary, Secondary, and Tertiary Prevention: Definitions, timing, interventions, and tools for each level of prevention.

-Natural history of infectious diseases: Infectious diseases of major social relevance and their modes of spread; prophylaxis of infectious diseases (direct, specific, indirect); infectious risk: etiology of infectious diseases, modes of transmission, and preventive precautions; cleaning, disinfection, and sterilization using physical and chemical methods.

-Health organization and planning: Principles and purposes of health system organization; models of healthcare service organization; evolution and reforms of the National Health Service (SSN); hospital and community healthcare organization; health planning at regional, national (Essential Levels of Care – LEA), and supranational levels.

-Vaccinations: indications, contraindications, and precautions: Vaccination history and future perspectives; types of immunity; types of vaccines; national immunization schedule.

Introduction to food and nutrition hygiene: Principles of human nutrition; health education in nutrition; food safety; hygiene and prevention in mass catering (HACCP system).

-Elements of hygiene applied to the hospital environment: Healthcare-associated infections – definitions, epidemiology, and prevention; cleaning, disinfection, sterilization, and pest control; hospital waste management; prevention and quality systems aimed at ensuring patient safety in hospital settings.

GYNECOLOGY AND OBSTETRICS

-Anatomy and physiology of the female reproductive system

-Malformative pathology of the female genital system

-Gynecological endocrinology

-Gynecological diagnosis

-Menstrual changes

-Phlogosis of the genital system

-Fertilization, embryology and placentation

INTERNAL MEDICINE

-Cardiac arrest, ALS (advanced life support) and causes of arrest (with particular focus on pregnant women)

-Pulmonary embolism (with a particular clinical case on a pregnant woman)

-Syncope (with a particular clinical case on a pregnant woman)

- Acute coronary syndromes
- Heart failure
- Congenital and acquired anemias
- Type 1 Diabetes Mellitus, Type 2 Diabetes Mellitus, and Gestational Diabetes
- Sepsis (with a particular focus on pregnant women)
- Pneumonia
- Arterial hypertension
- Acute and chronic viral hepatitis
- Coagulation disorders
- Kidney and metabolic disorders (with attention to pregnant women)

STATISTICS

- Introduction to biostatistics: some basic concepts, measures and measurement scales, sampling and statistical inference
- Descriptive statistics: ordering data, grouping data, frequency distributions, measures of central tendency and measures of dispersion, tables, diagrams and graphs
- Statistical measures used in medicine
- Observation of reality: clinical observation and epidemiological observation
- Central limit theorem
- The normal (Gaussian) curve and its properties
- Statistical inference: null hypothesis and alternative hypothesis, significance and statistical association
- Association and causality
- Hypothesis testing and introduction to tests of statistical significance
- Correlation

PHARMACOLOGY

GENERAL PHARMACOLOGY: Basic principles of pharmacology: definitions of pharmacology, drug, pharmacokinetics, pharmacodynamics, clinical pharmacology, toxicology, and chemotherapy. Drug classification and nomenclature. Drug discovery and development: preclinical research, clinical trials, and the role of the main regulatory agencies (EMA and FDA). Pharmacodynamics: drug receptors, agonists and antagonists, dose-response relationship, potency, efficacy, affinity, therapeutic index, and the main receptor families (G protein-coupled receptors, receptor tyrosine kinases, ligand-gated ion channels, and intracellular receptors); signal transduction pathways and second messenger systems. Pharmacokinetics: drug absorption, distribution, metabolism, and excretion; enteral and parenteral routes of administration; bioavailability; plasma protein binding; Phase I and Phase II metabolism and the role of cytochrome P450 enzymes; routes of drug elimination. Pharmacology in pregnancy and lactation: physiological changes affecting pharmacokinetics and pharmacodynamics during pregnancy, placental drug transfer, teratogenic drugs and mechanisms of teratogenesis, and principles of risk-benefit assessment for drug therapy during pregnancy and breastfeeding.

SPECIAL PHARMACOLOGY: Non-steroidal anti-inflammatory drugs (NSAIDs): mechanism of action, pharmacokinetics, pharmacodynamics, therapeutic effects, and adverse effects, with particular emphasis on acetylsalicylic acid (aspirin) and paracetamol (acetaminophen). Steroidal anti-inflammatory drugs (glucocorticoids): mechanism of action, pharmacokinetics, pharmacodynamics, therapeutic applications, and adverse effects. Opioid analgesics: classification, mechanism of action, therapeutic indications, adverse effects, and the concepts of tolerance, dependence, and withdrawal. Endocrine pharmacology of reproduction: hypothalamic-pituitary-gonadal axis hormones; estrogens, progestins, and androgens; hormonal contraception (combined hormonal contraceptives, progestin-only contraceptives, and emergency contraception); basic principles of the pharmacological management of infertility and medically assisted reproduction.

COURSE STRUCTURE

The course consists of 98 hours of classroom teaching, composed of frontal lessons and interactive learning activities, especially using presentations of clinical cases.

COURSE GRADE DETERMINATION

The final exam will be written and oral and it will be communicated at the beginning of the lessons together with the didactic materials necessary to the preparation for the final evaluation.

The exam will focus on the program and will assess the student's knowledge and mastery of specific scientific language.

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 Fail	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

Students may request optional workshops to explore specific topics in greater depth.

READING MATERIALS AND BIBLIOGRAPHY

GENERAL SURGERY

Student can choose:

-Argomenti di chirurgia; Autori: Piat - Borghese - Del Gaudio - Tonelli – Vagnoni; Editore: Casa Editrice Ambrosiana; ISBN: 9788808084392; Edizione: II 2000

-Manuale di Chirurgia; Autori: Pasquini Giorgio; Campa Rossella; D'Ambrosio Maurizio; Leonardo Giacomo; Editore: McGraw-Hill; ISBN/EAN: 9788838636783; Edizione: 1/2012

HYGIENE AND PUBLIC HEALTH

Ricciardi, Angelillo, Brusaferro, de Giusti, etc. Igiene per le professioni sanitarie. Idelson- Gnocchi 2014

GYNECOLOGY

Student can choose:

-Costantini. Trattando di Scienza ed Arte della Professionalità Ostetrica. Piccin. Ed. 2021.

-Pescetto, De Cecco, Pecorari, Ragni. Ginecologia e Ostetricia. SEU. Ed. 2017

MEDICAL STATISTICS

"Statistica per le scienze mediche. Un approccio non-matematico". Christine P. Dancey, John G. Reidy, Richard Rowe. Edizione italiana a cura di Annarita Vestri. PICCIN

Supplementary teaching materials provided by the professor.

PHARMACOLOGY

Le basi della farmacologia - Whalen - Lerchenfeldt - Giordano., Zanichelli, edizione IV 2025

INTERNAL MEDICINE

Student can choose:

-Pescetto, De Cecco, Pecorari, Ragni. Ginecologia e Ostetricia. SEU.

-Manuale di Ginecologia e Ostetricia di Giorgio Bolis. Edises, II edizione

Supplementary teaching materials provided by the professors.