

## DEGREE IN MIDWIFERY

### **Integrated Teaching: PHYSIOPATOLOGY OF HUMAN REPRODUCTION**

SSD: MED/18, MED/42, MED40, MED/01, MED/09, BIO/14

Credits: 7

Responsible Professor: [Maria Rosaria Gualano](#)

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Module: General Surgery

SSD: MED/18

Number of Credits: 1

Professor: [Tommaso Brancato](#)

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Module: General and Applied Hygiene

SSD: MED/42

Number of Credits: 1

Professor: [Maria Rosaria Gualano](#)

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Module: Gynecology and Obstetrics

SSD: MED/40

Number of Credits: 2

Professor: [Barbara Costantini](#)

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Module: Medical Statistics

SSD: MED/01

Number of Credits: 1

Professor: [Daniele Di Giovanni](#)

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Module: Internal Medicine

SSD: MED/09

Number of Credits: 1

Professor: [Stefano Nardi](#)

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Module: Pharmacology

SSD: BIO/14

Number of Credits: 1

Professor: [Ilaria Ippoliti](#)

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## **PREREQUISITES**

In order to follow the course profitably it is expected that students have preliminary knowledge of the basic principles of biochemistry, cell biology, anatomy, physiology, general pathology and the physiological changes during pregnancy.

## **LEARNING OBJECTIVES**

At the end of the course the student will be able to describe the main complications related to the different phases of a woman's life, pregnancy and birth control, character, signs and symptoms of the main pathologies of surgical interest, preparation for surgery, risk factors in surgery and post-operative complications.

Further objective of the course is the identification of the main pathologies of interest to internal medicine, as well as a knowledge of the risk factors, clinical presentation, diagnostic approaches and, lastly, patient management. Later, the course shall also present some more detailed analyses of women of fertile age. When relevant specific arguments regarding the presentation and consequences of the treated pathologies in for pregnant women will be examined more specifically along with their pre-disposing factors.

Moreover, the course aims to provide students with the skills to understand the concept of Public Health, basic principles of epidemiology and clinical study designs and learn about food hygiene and health protection of workers in the places of life and work, especially for the prevention of biological risk. The course also aims to provide tools for health education and health literacy to involving people in decisions concerning their health and necessary statistical bases to set up a research and collect and analyse data. The student must acquire a correct statistical terminology and be able to understand and interpret a scientific study.

Finally, this course aims at providing the student with the fundamental knowledge of Pharmacology, including the branches of Pharmacokinetics and Pharmacodynamics, with specific reference to pharmacodynamic and pharmacokinetic parameters modification during pregnancy. The course also aims at providing the student with the fundamental knowledge of some Special Pharmacology topics, specifically related to steroidal and non-steroidal anti-inflammatory drugs, opioid analgesics and signs 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 factors that increase surgical surgical risk, of any post-operative complications (phlebothrombosis, thrombophlebitis, local and / or generalized infections)
- Recognize and evaluate signs and symptoms of various types of burns, frostbite, traumatic injuries, bruises, fractures
- Recognize and evaluate signs and symptoms of failed or difficult wound repair
- Recognize and evaluate signs and symptoms of various shock pictures
- Recognize and evaluate signs and symptoms of certain types of infections, such as tuberculosis, carbuncle and amoebiasis

- Recognize and evaluate signs and symptoms of various acute abdomen pictures
- Recognize and evaluate signs and symptoms of proctologic pathologies (hemorrhoids, fistulas, prolapse)
- Describe basic principles of Hygiene and the determinants of health
- Describe prevention measures and organization
- Explain transmission and prophylaxis of infectious diseases
- Describe evidence and type of immunization
- Describe chronic-degenerative disease, the role of genetics and the environment
- Explain basic principles of food hygiene, health protection of workers in the places of life and work
  
- Describe the gynaecological anatomy
- Describe the main gynaecological complications
- List the main pathologies commonly encountered in the setting of internal medicine
- Describe the main risk factors, symptoms, and signs of these pathologies
- Explain the main diagnostic approaches and patient management
- Connect the problems regarding the pathologies studied and their consequences with pregnancy
- Describe the design of a scientific study and to interpret the results
- Describe what pharmacology, pharmacokinetics, and pharmacodynamics deals with
- Describe different kinds of drug interactions
- Explain pharmacodynamic and pharmacokinetic changes in a pregnant woman.
- Describe concept and mechanisms of teratogenesis
- Describe classification, mechanism of action, pharmacokinetics, pharmacodynamics, side effects, of steroidal anti-inflammatory drugs, non-steroidal anti-inflammatory drugs and opioid analgesics
- Describe endocrine pharmacology principles, with specific reference to sexual hormones and contraceptive pill

### **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**

- Present the topics orally in an organized and consistent manner
- Use a proper scientific language coherent with the topic of discussion

### **Making Judgements**

- Recognize the importance of an in-depth knowledge of the topics consistent with a proper education
- Identify the importance of a proper theoretical knowledge of the topic in the clinical practice

## COURSE SYLLABUS

### SURGERY

- Etiopathogenesis, diagnosis and surgical therapy of:
- Acute and chronic inflammation: general and surgical characteristics
- Risk factors in surgery, post-operative complications, preparation for surgery
- Escara, Ulcer, sore and gangrene.
- Burns and frostbite
- Various types of shocks
- Wounds and their healing
- Tuberculosis, carbuncle, amoebiasis
- Lymphatic system: lymphedema, lymphangitis.
- Veins and arteries; varicose veins, thrombophlebitis and phlebothrombosis, embolisms, aneurysms, chronic obstructive arteriopathies, arteriovenous fistulas.
- Anal abscesses and fistulas: Anatomy, physiology, incontinence, prolapse, hemorrhoids, anal fissure, neoplasms.
- Peritoneum: acute abdomen, peritonitis, intestinal obstruction, mechanical and paralytic ileus.
- Surgical oncology: epidemiology, etiology, prevention, oncology diagnostics and antineoplastic therapies.

### HYGIENE

- *Public Health and Preventive Medicine definition and goals.* Determinants of health; health promotion; health education; genetic and environmental factors of disease.
- *Introduction to epidemiology.* Demography and bio-statistical principles and analysis of more important health indicators (e.g. birth rate, mortality rate, infant mortality, etc.); absolute and relative risk. Epidemiology of infectious disease, epidemiology of chronic disease.
- *Primary, secondary and tertiary Prevention.* Definition, timing and tools.
- Natural history and spectrum of infectious disease. More important infectious disease and their spread (epidemic, pandemic and cluster); direct, indirect and specific prophylaxis; infectious risk: cause, transmission, preventive measure; chemical and physical cleaning, disinfection, sterilization.
- *Vaccine: indications, contraindications and preventive measures.* Vaccine, history and perspectives; different type of immunity; different type of immunization; vaccine schedule.
- *Environment and health.* Climate changes, micro-climate and water; prevention of biological risk; health protection and safety of health workers.
- *Food Hygiene and food-borne outbreaks.* Human nutrition; food education; food control; Hygiene and prevention in collective catering (HACCP system).
- *Principles of Public Health applied to the Hospital setting.* Healthcare Associated Infections (HCAI) – definition, epidemiology and prevention; Sanitization, disinfection, sterilization and disinfestation; Waste management in the hospital; Prevention and quality system aimed to ensure patient safety in the hospital (Services based on international gold standards and regulations in healthcare – JCI accreditation).

### 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

#### STATISTICS

- Introduction to statistics
- Reality observation: clinical observation and epidemiological observation
- Descriptive statistics and inferential statistics
- Quantitative and qualitative variables
- Absolute, relative and percentage frequency
- Tables, diagrams and graphs
- Statistical indices: measures of central tendency and dispersion
- Central limit theorem
- The normal curve (Gaussian) and its properties
- Statistical inference: null hypothesis and alternative hypothesis, the value of p, the statistical association
- Association and causality
- Hypothesis testing and introduction to statistical significance tests
- Correlation

#### MEDICINE

- Each pathology will be introduced by base principles regarding:
- Pneumonia and COVID-19
- Chronic Obstructive Pulmonary Disease (COPD)
- Acquired and congenital anemia
- Type 1, Type 2 Diabetes mellitus and gestational diabetes
- Disorder of coagulation
- Acute and Chronic Epatitis
- Chirrosis
- Acute (STEMI(NSTEMI) and Chronic coronary syndromes
- Congestive Heart Failure
- Acute and Chronic Kidney diseases
- Acute cerebrovascular pathologies (TIA/Stroke)
- Hypertension

#### PHARMACOLOGY

- GENERAL PHARMACOLOGY: Basic definitions: pharmacology, drug, pharmacokinetics, pharmacodynamics, clinical pharmacology, toxicology, chemotherapy. Drug classification criteria: synthetic/semisynthetic; over the counter/prescription. Drug nomenclature: scientific name, generic name, brand name. New drug development: clinical trials and regulatory agencies (FDA and EMA). Pharmacodynamics: agonist and antagonist receptors. Dose-response curve. Pharmacodynamic parameters: potency, efficacy, affinity, EC50, ED50, TD50, LD50, therapeutic index. Different kinds of receptors: G-proteins coupled, tyrosine kinase, ion channels, intracellular receptors; second messengers. Pharmacokinetics:

absorption, distribution, metabolism, excretion processes. Routes of administration, enteral and parenteral. Plasma proteins binding. Type I and II metabolism, CYP enzymes. Routes of excretion. Bioavailability. Pharmacokinetic and pharmacodynamic changes in pregnancy. Teratogenic drugs, mechanisms of teratogenesis; FDA risk categories in pregnancy.

- **SPECIAL PHARMACOLOGY:** steroidal anti-inflammatory drugs: mechanism of action, pharmacokinetics, pharmacodynamics, side effects. Non-steroidal anti-inflammatory drugs: classification, mechanism of action, pharmacokinetics, pharmacodynamics, side effects. Aspirin and Paracetamol. Opioid analgesics: mechanism of action, pharmacokinetics, pharmacodynamics. Tolerance, dependence, and withdrawal concepts Endocrine Pharmacology: hypothalamic, pituitary, thyroid, sexual hormones. Different types of contraceptive pills.

### **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 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:

<b>&lt; 18 Fail</b>	The candidate possesses an inadequate knowledge of the topic, makes significant errors in applying theoretical concepts, and shows weak presentation skills.
<b>18-20</b>	The candidate possesses a barely adequate and only superficial knowledge of topic, limited presentation skills, and only an inconsistent ability to apply theoretical concepts.
<b>21-23:</b>	The candidate possesses an adequate, but not in-depth, knowledge of the topic, a partial ability to apply theoretical concepts, and acceptable presentation skills.
<b>24-26</b>	The candidate possesses a fair knowledge of the topic, a reasonable ability to apply theoretical concepts correctly and present ideas clearly.
<b>27-29</b>	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.
<b>30-30L</b>	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 can request optional workshops to deepen some specific topics.

## READING MATERIALS

### SURGERY :

- Argomenti di chirurgia; Autori: Piat Borghese Del Gaudio Tonelli – Vagnoni; Editore: Casa Editrice Ambrosiana; ISBN: 9788808084392; Edizione: Il 2000
- Manuale di Chirurgia; Autori: Pasquini Giorgio; Campa Rossella; D'Ambrosio Maurizio; Leonardo Giacomo; Editore: McGraw-Hill; ISBN/EAN: 9788838636783; Edizione: 1/2012

### HYGIENE :

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

### GYNECOLOGY :

Choice between:

- Costantini. Trattando di Scienza ed Arte della Professionalità Ostetrica. Piccin. Ed. 2021.
- Pescetto, De Cecco, Pecorari, Ragni. Ginecologia e Ostetricia. SEU. Ed. 2017

### PHARMACOLOGY :

- Le basi della farmacologia MA Clark et al., Zanichelli

### OTHER MODULES:

- Didactic material (guidelines, scientific papers, etc.) delivered by the Professors.