BSc in Nursing

INTEGRATED COURSE TITLE: PROFESSIONAL LABORATORY
NUMBER OF ECTS CREDITS: 1
CODE: MEDS-24/C
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PREREQUISITES

No specific prerequisites are required.

LEARNING OBJECTIVES

The objective of Professional Laboratory is to provide students with the necessary skills to safely and effectively administer medications. This includes a thorough understanding of nursing responsibilities related to medication administration, including safety procedures and ethical professional practices. The Laboratory also aims to provide students with detailed knowledge of the various routes of medication administration and available pharmaceutical forms, as well as to reinforce their mathematical skills through math reviews and the application of mathematical concepts to nursing practice, especially in the context of pharmacological dosage calculations.

The professional laboratory on electrocardiogram (ECG) aims to develop in students technical-practical and clinical competencies related to the execution and basic interpretation of the ECG. The activity is oriented toward the acquisition of safe operational skills, understanding of cardiac electrophysiological principles, and the development of clinical reasoning in cardiovascular assessment, under the supervision of experienced professionals.

LEARNING OUTCOMES

Knowledge and Understanding

At the end of the professional laboratory, the student will be able to:

- Understand the role and responsibilities of the nurse in medication administration, including the legal, ethical, and professional requirements involved.
- Have a thorough knowledge of the various routes of medication administration (oral, parenteral, topical, etc.) and available pharmaceutical forms (tablets, capsules, injectable solutions, etc.).

- Understand the fundamental mathematical concepts necessary to perform pharmacological dosage calculations accurately and safely.
- Have a clear understanding of the concepts of solutions and dilutions and their practical applications in the preparation and administration of medications.
- Be able to correctly use various calculation methods to determine accurate pharmacological dosages, considering patient characteristics and medical prescriptions.
- Have a detailed knowledge of the different types of medications administered via enteral and parenteral routes, as well as the procedures and precautions necessary for the safe administration of such medications.
- Understand the specific considerations and methodologies involved in calculating medication doses in pediatric patients, taking into account differences in body weight and development.
- Know the basic principles of electrocardiography.
- Understand the cardiac electrical anatomy and the genesis of the ECG tracing.
- Recognize the main components of the ECG (waves, segments, intervals).
- Understand the clinical significance of the main ECG leads.
- Know the fundamental criteria of a normal ECG tracing.

Applying knowledge and understanding

At the end of the professional laboratory, the student will be able to:

- Apply the acquired knowledge on nursing responsibilities and standard procedures to ensure safe and accurate medication administration, using the correct routes of administration and pharmaceutical forms.
- Utilize the learned mathematical concepts to perform accurate calculations of pharmacological dosages, considering physician's instructions, patient characteristics, and any necessary dilutions.
- Apply the understanding of solutions and dilutions to properly prepare pharmaceutical solutions according to prescribed specifications, ensuring correct and safe medication concentrations.
- Use the acquired knowledge of pediatric dosage calculations to determine appropriate doses in pediatric patients, adjusting doses based on body weight and individual needs of the child.
- Apply the understanding of medications and their routes of administration to recognize and manage any complications during medication administration, taking necessary corrective measures in case of adverse reactions or compatibility issues.
- Collaborate with other healthcare team members, including physicians and pharmacists, to ensure proper medication administration, exchanging relevant information and ensuring integrated and coordinated management of pharmacological treatment.
- Correctly perform a 12-lead ECG.
- Properly place electrodes according to international standards.
- Verify the quality of the tracing and correct artifacts if necessary.
- Apply a systematic approach to basic ECG interpretation.
- Recognize the main elements of a normal ECG tracing and common variations.

Communication skills

The student will have to orally present the core topics in an organized and coherent manner, using specific scientific language that is appropriate and relevant to the topic of discussion.

Making judgements

At the end of the professional laboratory, the student will be required to:

- Utilize judgment autonomy to assess the patient's condition before administering medications, considering factors such as medical history, age, body weight, and current patient conditions.
- Be able to independently determine priorities in drug administration based on the urgency of patient needs, giving priority to critical medications or those requiring timely administration.
- Utilize judgment autonomy to manage any discrepancies or inconsistencies in medical prescriptions or dosage calculations, consulting physicians or pharmacists when necessary to obtain clarification or corrections.
- Be capable of autonomously adapting pharmacological therapies based on patient response and monitoring results, adjusting dosages or modifying administration methods to ensure optimal and personalized treatment.
- Utilize judgment autonomy to identify potential risks or complications associated with drug administration and adopt appropriate preventive measures to mitigate such risks, such as monitoring vital signs or blood levels.
- Utilize judgment autonomy to educate and inform the patient and their family about the administered medications, explaining purposes, possible side effects, and precautions to follow, thereby promoting active and informed patient participation in their own care.
- Evaluate the technical correctness of ECG execution.
- Identify possible errors in electrode placement or tracing artifacts.
- Critically interpret the data obtained from the ECG tracing.
- Recognize situations that require further clinical evaluation or consultation with a professional

Learning skills

The student will have acquired appropriate learning skills and methods for deepening and improving their skills in pharmacology, including through consultation of scientific literature. Additionally, the student will adopt a professional behavior: an active attitude, continuous commitment, a reflective approach oriented towards self-learning, and acceptance of feedback for improvement in achieving the expected objectives.

COURSE SYLLABUS

- Nursing responsibility in medication administration
- Routes of drug administration and pharmaceutical forms
- Mathematics review
- Solutions and dilutions
- Calculation methods for pharmacological dosages
- Enteral and parenteral drug administration: dosage calculations and exercises

- Dosage calculation in pediatric patients
- Introduction to the basic principles of electrocardiography.
- Presentation of ECG leads and their clinical significance.
- Practical demonstration of correct placement of peripheral and precordial electrodes.
- Guided performance of a 12-lead ECG on a simulator or patient.
- Verification of tracing quality and identification of artifacts.
- Analysis of the main components of the ECG tracing (P wave, QRS complex, T wave, intervals, and segments).
- Application of a systematic approach to basic ECG interpretation (rate, rhythm, morphology, intervals).
- Identification of the main features of a normal sinus rhythm.
- Discussion of examples of ECG tracings with simple physiological and pathological variations.
- Supervised practical exercises with formative feedback.

COURSE STRUCTURE

The Nursing Degree Course provides a total of 1 university training credit (CFU). One CFU corresponds to 30 hours, therefore the total number of internship hours in the first year of the course is 30 hours.

Attendance at the professional laboratory is mandatory for all students enrolled in the Nursing Degree Course.

ASSESSMENT CRITERIA

The Laboratory Professional 2 exam consists of a written examination, the assessment of which is an integral part of the overall evaluation of the course. All the contents indicated in the course syllabus will be assessed. The evaluation will assess the student's knowledge and understanding, ability to apply knowledge and understanding, and autonomy of judgment, weighted at 30%, 30%, and 10%, respectively, in the final score.

The evaluation criteria considered will be: acquired knowledge; autonomy of judgment; communication skills; and learning ability. The final examination will be assessed according to the following criteria:

fail	The candidate possesses an inadequate knowledge of the topic, makes significant errors in applying theoretical concepts
pass	The candidate possesses an adequate knowledge of the topic and good ability to apply theoretical concepts

OPTIONAL ACTIVITIES

Students will have the opportunity to engage in theoretical and practical exercises.

RECOMMENDED READING

- Ledonne, G., Tolomeo, S. (2014). Calcoli e dosaggi farmacologici. La responsabilità dell'infermiere. Casa Editrice Ambrosiana.