

Name of discipline	Physical and Chemical Methods of Analysis		
Type	Compulsory	Credits	4
Academic year	II	Semester	IV
Number of hours	Course	15	Practice/laboratory work
	Seminar		Self-training
Component	Specialized		
Course holder	Mirzac Viorica, PhD, assistant		
Location	Chisinau, 66 Malina Mica street, building 2		
Conditionings and prerequisites of:	Program: Basic knowledge in related disciplines such as general chemistry, quantitative analytical chemistry, and physical chemistry.		
	Competences: knowledge of the teaching language, Basic digital skills (internet use, document processing, text editors, spreadsheets, and presentation software), communication skills and teamwork abilities.		
Mission of the discipline	<p>The curriculum for the physicochemical methods of analysis course is designed for second-year students of the Faculty of Pharmacy. The course aims to provide training, refinement, and deepening of knowledge in both the theoretical and practical aspects of contemporary physicochemical analysis methods.</p> <p>A fundamental reference for every pharmacist is the Pharmacopoeia, which describes classical or instrumental methods for analysing the active substances in each medicinal product. Therefore, pharmacy students must be familiar with physicochemical analysis methods.</p>		
Overview of the topics	Spectral and optical analysis methods. Molecular absorption spectroscopy (UV-Vis and IR). Luminescence. Nephelometry and turbidimetry. Refractometry and polarimetry. X-ray fluorescence. Nuclear magnetic resonance. Electron spin resonance. Mass spectrometry. Electrochemical analysis methods: potentiometry, polarography, voltammetry, coulometry. Chromatographic analysis methods: column chromatography, planar chromatography, thin-layer chromatography, high-performance liquid chromatography, gas chromatography, ion-exchange chromatography. Thermal analysis methods: thermogravimetric analysis, differential thermal analysis.		
Outcomes	<ul style="list-style-type: none"> • to know the particularities and classification of the physicochemical methods of analysis; • to comprehend the generation of analytical signals in different physicochemical methods; • to justify the selection of the most appropriate physicochemical analysis method for a mixture of pharmaceutical substances; • to apply theoretical knowledge to derive and use calculation formulas in various analysis methods; • to integrate and apply knowledge from the physicochemical methods of analysis course to other pharmaceutical disciplines. 		

Clinical skills	<ul style="list-style-type: none"> • to understand the fundamental law of electromagnetic radiation absorption and spectrophotometric methods based on this law; • to operate laboratory equipment specific to the course; • to apply laboratory methodologies and techniques for studying physicochemical analysis methods; • to analyse spectra of pharmaceutical substances; • to classify electrochemical analysis methods and implement them in the quantitative analysis of pharmaceuticals; • to use theoretical and practical knowledge to construct graphs and process experimental data • to interpret and evaluate analytical results • to develop a scientific vocabulary in the field of analytical chemistry
Evaluation form	Exam