<table>
<tr><td>Name of the discipline</td><td colspan="4">Modern instrumental analyses</td></tr>
<tr><td>Type</td><td colspan="2">Optional</td><td>Credits</td><td>2</td></tr>
<tr><td>Year of study</td><td colspan="2">III</td><td>semester</td><td>V</td></tr>
<tr><td rowspan="2">Number of hours</td><td>course</td><td>15</td><td>Practical/laboratory work</td><td></td></tr>
<tr><td>Seminars</td><td>30</td><td>Individual work</td><td>15</td></tr>
<tr><td>compound</td><td colspan="4">Specialized</td></tr>
<tr><td>Course holder</td><td colspan="4">Valica Vladimir, PhD in Pharmacy, University Professor</td></tr>
<tr><td>location</td><td colspan="4">Malina Mica, 66</td></tr>
<tr><td rowspan="2">Prerequisites and requirements of:</td><td colspan="4">Program: knowledge of general chemistry, inorganic chemistry, organic chemistry, analytical chemistry, biophysics and physical chemistry.</td></tr>
<tr><td colspan="4">Competencies: It is a multidisciplinary field that lays the foundation for the training of the future pharmacist's instrumental analysis skills, which are achieved within this interdisciplinary course.</td></tr>
<tr><td>The mission of the discipline</td><td colspan="4">Modern Instrumental Analysis is a necessary discipline for pharmacy students, as it allows for deeper integration of knowledge acquired in previous courses and offers students the opportunity to substantiate the practical skills necessary for specialized disciplines such as pharmaceutical chemistry and drug control. Modern Instrumental Analysis aims to help future pharmacists learn about contemporary analysis methods used in the standardization and control of medicines, as well as to develop the practical skills necessary to ensure the quality of medicines.</td></tr>
<tr><td>The topic presented</td><td colspan="4">Instrumental analysis. General considerations. Classification of instrumental analysis methods. Characteristics of measuring devices. Separation methods Classification of chromatographic methods. Nomenclature in chromatography. Adsorption chromatography and Partition chromatography. Adsorption chromatography. Working technique. Phase composition. Practical applications. Gas chromatography and High-performance liquid chromatography. General. Apparatus. Analytical applications . UV and visible spectrophotometry . Fluorescence spectrometry. Apparatus. Qualitative and quantitative analysis. Applications. IR spectrophotometry. Interpretation of IR spectra. Nuclear magnetic resonance spectrometry and electron spin resonance. Atomic absorption spectrometry. Emission spectrometry. Non-spectral methods: Mass spectrometry: General. Apparatus. Detectors Analytical applications. Mass spectrometry. Principle. Interpretation of mass spectra . Non-spectral methods. Refractometry. Rotary optical dispersion. Circular dichroism. Methods electrochemical. Potentiometry. Amperometry. Conductometry. Polarography. X-ray methods. Thermal methods of analysis.</td></tr>
<tr><td>Study purposes</td><td colspan="4">• to know: the particularities of instrumental methods;<br>• to know the criteria for selecting the instrumental method depending on the purpose of the research and the particularities of the medicinal substance;<br>• be able to identify the main types of errors in the experimental measurement process and ways to minimize them;<br>• to formulate conclusions regarding the quality of the medicine based on experimental data;</td></tr>
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| | • to apply instrumental analysis methods in pharmaceutical practice . |
| Purchased practical skills | • applying the rules of rigorous and efficient work in the laboratory and respecting the work technique and safety technique in the process of pharmaceutical analysis;<br>• ensuring the efficient conduct and effective involvement in the activities organized in the group. Identifying professional training needs based on the evolution of science in the field of instrumental analysis of the drug;<br>• Identifying continuing education opportunities and effectively utilizing learning resources and techniques for one's own development. |
| Evaluation form | Exam |