**CALENDAR AND THEMATIC LESSON PLAN FOR THE DISCIPLINE**

**"MEDICINES FROM NATURAL RAW MATERIAL"**

**for the 7th semester of the 2023-2024 academic year**

**Group 5402**

|  |  |  |
| --- | --- | --- |
| **N** | **Topics** | **Dates, duration 5 hours of each lesson** |
| 1 | Dosage forms based on plant raw materials. Main processes and equipment of pharmaceutical technology in the production of herbal medicines. Ethyl alcohol as a solvent and extractant. Dilution and strengthening of alcohol solutions. Determination of the concentration of alcohol solutions. mass transfer processes. Classification. Phytoextraction preparations. Theoretical foundations for the extraction of capillary-porous raw materials. Factors affecting the completeness and speed of BAS extraction. Extraction methods. Classification. Characteristic. Process intensification methods. Equipment for extraction. | 18.11.24 |
| 2 | Tinctures. Obtaining tinctures by maceration, percolation, intermittent percolation. Processes and devices. Methods for cleaning extracts. Settling. Filtration. Centrifugation. mass transfer processes. Equipment. Standardization of tinctures. Alcohol recovery. Material balance for absolute alcohol and active substances. | 25.11.24 |
| 3 | Liquid extracts: methods of preparation and purification. The extracts are thick and dry. Methods for obtaining and cleaning. Processes and devices. Thermal processes. Heat carriers. The use of water vapor as a heat carrier. Heat exchangers. Evaporation. Types of vacuum evaporators and installations. Side effects of evaporation. Drying. Statics and kinetics of drying. Dryers are convective, contact, etc. Equipment. Standardization of tinctures and extracts. Oil extracts. | 02.12.24 |
| 4 | Syrups, fragrant waters. Theoretical foundations of distillation of essential oils. Equipment. Technological schemes of production. Potions with fragrant waters, herbal preparations and syrups. | 09.12.24 |
| 5 | Aqueous extracts from medicinal plant materials. Characteristic. Classification. Use of the main provisions of the theory of the extraction process in obtaining aqueous extracts. Technology of infusions and decoctions depending on the content of active substances in raw materials. Medicines containing galenic preparations and aqueous extracts made from medicinal plant materials and concentrate extracts. | 09.12.24 |
| 6 | **Control work** | 16.12.24 |
| 7 | Maximum purified phytopreparations: methods of obtaining and purification. General technological scheme. Private technology. Standardization of the most purified drugs. Phytopreparations of individual substances. General technological scheme. Private technology. Preparations of biogenic stimulants. Preparations from fresh plant materials. | 16.12.24 |
| 8 | Preparations from animal raw materials: methods of production and purification. Private technology. Storage conditions and methods of preservation of organs and tissues. Technological scheme for obtaining dried preparations glands and fabrics. Medicinal forms and standardization. Peculiarities of technology extraction preparations for internal use. Technological scheme of obtaining drugs for parenteral administration. High performance purification methods: gel filtration, ion exchange, affinity chromatography, etc. Insulin preparations (genetically engineered, pork, beef). Classification of drugs by duration of action (short, medium and long). extension methods. Highly purified insulin preparations. Insulin "M" and "MS". Standardization insulin. The form release. Automatic dispensers of insulin. Private technology. Enzymatic drugs. General characteristics: definition, specifics of enzymatic reactions. Classification and nomenclature of enzymes. Enzyme preparations of plant and animal origin. immobilized enzymes. Methods of immobilization. Water-soluble preparations of immobilized enzymes. Incorporation of enzymes into microcapsules. Incorporation of enzymes into liposomes. Preparations of immobilized enzymes used at local diseases. Standardization of enzyme preparations. Methods for assessing enzymatic activity. Private technology. | 23. 12.24 |
| 9 | **Final test, certification of skills** | 30.12.24 |

Head of Department of Pharmaceutical Technology

Associate Professor Kamaeva S.S.