УТВЕРЖДАЮ
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CALENDAR AND THEMATIC PLAN
of laboratory and practical classes on pharmacognosy
for 3rd year students of the Pharmacy Faculty
for 6th semester 2024-2025 academic year

№	Date	The name of the thematic blocks of the discipline (course)	Themes of classes included in the thematic block	Basic questions for preparation
1.	01.02.2025 - 07.02.2025	Alkaloids	Phytochemical analysis of medicinal plant raw materials containing alkaloids. Part 1 Part 2	1. Chemical classification of alkaloids using basic structural formulas. 2. Physical and chemical properties of alkaloids. 3. Methods of isolation of alkaloids from plant raw materials. 4. Qualitative analysis of plant raw materials containing alkaloids. 5. Methods of quantitative analysis of plant raw materials containing alkaloids. Formulas of heterocycles: pyrrolidine, pyrrolizidine, piperidine, pyridine, tropane, quinolizidine, quinoline, isoquinoline, indole, purine.
2.	08.02.2025 - 14.02.2025		Analysis of medicinal plant material containing alkaloids (I). Part 3 Part 4	1. The dynamics of alkaloid synthesis in plants. 2. The significance of alkaloids in plants. 3. Characteristics of acyclic alkaloids and alkaloids with nitrogen in the side chain. 4. Medicinal plants and raw materials containing alkaloids: - *Capsicum annuum;* - *Ephedra equisetina*. Formulas: capsaicin, L-

				ephedrine, D-pseudoephedrine.
3.	15.02.2025 - 21.02.2025		Analysis of medicinal plant material containing alkaloids (II). Part 5 Part 6	1. Characteristics of the collection and drying of plants containing alkaloids. 2. Characteristics of storage of medicinal raw materials containing alkaloids. 3. Characteristics of tropane alkaloids. 4. General characteristics and micro-diagnostic features of plants of the family Solanaceae. 5. Medicinal plants and raw material containing alkaloids: - *Hyoscyamus niger;* - *Datura stramonium;* - *Datura innoxia;* - *Atropa belladonna.* <u>Formulas:</u> tropane, tropine, scopane, tropic acid, L-hyoscyamine, D- hyoscyamine, scopolamine, cocaine.
4.	22.02.2025 - 28.02.2025		Analysis of medicinal plant material containing alkaloids (III). Part 7 Part 8	1. Characteristics of isoquinoline and steroid alkaloids. 2. Medicinal plants and raw materials containing alkaloids: - *Chelidonium majus;* - *Berberis vulgaris;* - *Papaver somniferum,* - *Veratrun lobelianum.* <u>Formulas:</u> isoquinoline, morphine, codeine, papaverine, narcotine, sanguinarine, helidonin, berberine (ammonium and carbinol forms).
5.	01.03.2025 - 07.03.2025		Analysis of medicinal plant material containing alkaloids (IV). Part 9 Part 10	1. Characteristics of the indole and quinolizidine alkaloids. 2. Medicinal plants and raw materials containing indole alkaloids: - *Cataranthus roseus,* - *Vinca minor,* 3. Medicinal plants and raw materials containing quinolizidine alkaloids: - *Nuphar lutea.* <u>Formulas:</u> indole, quinolizidine,

				nufflein.
6.	08.03.2025 - 14.03.2025	**Concluding thematic block: «Alkaloids».**	**Preparation questions for the concluding thematic block are on the portal.**	
7.	15.03.2025 - 21.03.2025	Glycosides	Analysis of medicinal plant material containing iridoids. Part 1 Part 2	1. Concept of glycosides. Classification. 2. Physical and chemical properties of glycosides. 3. Glycosidal bitter principles. Iridoids. 4. Medicinal plants and raw materials containing iridoides: - *Menyanthes trifoliata;* - *Centaurium pulchellum;* - *Centaurium erythraea;* - *Taraxacum officinale*.
8.	22.03.2025 - 28.04.2025		Analysis of medicinal plant material containing cardiac glycosides. Part 3 Part 4	1. Concept of cardiac glycosides. Specific features of the structure of the aglycon and sugar component. 2. Biogenesis of cardiac glycosides. 3. Characteristics of harvesting and drying of raw materials containing cardiac glycosides. 4. Medicinal plants and raw materials containing cardiac glycosides: - species of *Digitalis;* - *Convallaria mayalis;* - *Strophanthus combe.* <u>Formulas:</u> cyclopentano-perhydrophenanthrene, general formulas for cardenolides and bufadienolides, K-strophanthidine type aglycone.

9.	29.03.2025 - 04.04.2025		Phytochemical analysis of medicinal plant raw materials containing iridoids and cardiac glycosides. Part 5 Part 6	1. Chemical classification of iridoids and cardiac glycosides using basic structural formulas. 2. Physical and chemical properties of these groups of compounds. 3. Methods of isolation from herbal raw materials. 4. Qualitative analysis of raw materials containing iridoids and cardiac glycosides. 5. Methods for quantitative analysis of raw materials containing iridoids. 6. Biological method of standardisation of medicinal plant raw materials containing cardiac glycosides. <u>Formulas:</u> cyclopentano-perhydrophenanthrene, general formulas for cardenolides and bufadienolides, K-strophanthidine type aglycon, digitoxose, cimarose.
10.	05.04.2025 - 11.04.2025		Phytochemical analysis of medicinal plant raw materials containing saponins. Part 7 Part 8	1. Chemical classification of saponins using basic structural formulas. 2. Physical and chemical properties of compounds of this group. 3. Methods of isolation from plant raw materials. 4. Qualitative analysis of raw materials containing saponins. 5. Methods of quantitative analysis of raw materials containing saponins. <u>Formulas:</u> diosgenin, furostanol glycoside, α-amyrin, β-amyrin, fridelin, lupeol, dammaran, ursolic acid, oleanolic acid, glycyrrhizic acid.

11.	12.04.2025 - 18.04.2025		Analysis of medicinal plant material containing saponins. Part 9 Part 10	1. Medical significance of raw materials containing saponins. 2. Medicinal plants and raw materials containing saponins: - species of *Glycyrrhiza;* - *Astragalus dasyanthus*, - *Tribulus terrestris*. <u>Formulas:</u> diosgenin, furostanolic glycoside, α-amyrin, β-amyrin, fridelin, lupeol, dammaran, ursolic acid, oleanolic acid, glycyrrhizic acid.
12.	19.04.2025 - 25.04.2025	**Concluding thematic block: «Glycosides».**	**Preparation questions for the concluding thematic block are on the portal.**	
13.	26.04.2025 - 02.05.2025	Phenolic compounds	Phytochemical analysis of medicinal plant raw materials containing simple phenolic compounds. Part 1 Part 2	1. Phenolic compounds. Concept. Classification. Basic structural formulas. 2. Chemical classification of simple phenols. Physical and chemical properties of compounds of this group. 3. Methods of isolation from plant raw materials. Qualitative analysis of raw materials containing simple phenols. 4. Methods for quantitative analysis of raw materials containing simple phenols. 5. Medicinal plants and raw materials containing simple phenols compounds: - *Vaccinium vitis-idaea*; - *Arctostaphylos uva-ursi*; - *Rhodiola rosea*. <u>Formulas:</u> phenol, resorcinol, pyrocatechin, hydroquinone, salicylic acid, floroglucin, arbutin, methylarbutin.
14.	03.05.2025 - 09.05.2025		Phytochemical analysis of medicinal plant raw materials containing anthracene derivatives. Part 3 Part 4	1. Chemical classification of anthracene derivatives. Physical and chemical properties of compounds of this group. 2. Methods of isolation from plant raw materials. 3. Qualitative analysis of raw materials containing anthracene

				derivatives. 4. Methods for quantitative analysis of raw materials containing simple phenols.
15.	10.05.2025 - 16.05.2025		Analysis of medicinal plant material containing anthracene derivatives (1). Part 5 Part 6	1. Medicinal plants and raw materials containing anthracene derivatives: - *Frangula alnus;* - *Rhamnus cathartica*; - species of *Cassia*. - Formulas: anthracene, anthranol, anthrone, anthraquinone, chrysacin, alizarin
16.	17.05.2025 - 23.05.2025		Analysis of medicinal plant material containing anthracene derivatives (2). Part 7 Part 8	1. Medicinal plants and raw materials containing anthracene derivatives: - *Rubia tinctorum*; - *Rumex confertus;* - *Rheum palmatum*; - *Aloe abrorescens.* Formulas: anthracene, anthranol, anthrone, anthraquinone, chrysacin, alizarin
17.	24.05.2025 - 30.05.2025	**Concluding thematic block: «Phenolic compounds».**	**Preparation questions for the concluding thematic block are on the portal.**	
18.	31.05.2025 - 06.06.2025	**Concluding lesson.**		