

"EDUCATIONAL PRACTICE IN BOTANY"
for students of the educational programme
speciality
on speciality of training 33.05.01 Pharmacy,
orientation (profile) Pharmacy,
full-time education form
for the academic year 2024-2025

Federal State Budgetary Educational Institution of Higher Education
institution of higher education «Volgograd State Medical University Ministry of
Health of the Russian Federation»
Department of Pharmacognosy and Botany

Faculty: Pharmaceutical
Speciality: 33.05.01 "Pharmacy"

PRACTICE DIARY
"Botany practical training"
student of the 2nd year
Group _____

(Full name)

The internship supervisor from the organisation (university)
_____ / _____ /

г. Volgograd - 202__year.

[illegible]

Instructions
on safety and labor protection during the field routes in the field
training practice on botany.

When performing tasks in natural conditions, being on excursions in the woods, fields, meadows, ponds, special attention should be paid to the observance of safety rules and labor protection:

1. On excursions students should go out in corresponding clothes and footwear. Shoes must be closed, comfortable, without heels, comfortable clothes with long sleeves if possible (shoulders must be closed from the sun), must have a headdress.

2. Strictly obey the rules of the road, especially when crossing highways, country roads, railroad tracks, when driving along country roads and asphalt roads.

Particular caution should be exercised when working near power lines, if possible not to be under them.

4. Do not take shelter from thunderstorms under trees. Always keep metal objects (spades, diggers, knives etc.) away from yourself. Do not use cell phones and internet during a thunderstorm.

5. It is strictly forbidden to smoke in the fields sown with cultivated plants, in steppe and forest natural communities.

6. It is forbidden to drink swamp or river water. Drinking water must be taken from home.

7. You should be especially careful when collecting poisonous plants, as well as plants capable of causing local irritation and having photosensitizing action. You must not taste their fruits, bite the shoots and leaves, or allow the juice of these plants to get on your skin. Remember that freshly picked plants are more dangerous than dried ones. Lying on the grass can cause skin irritation.

8. It is impossible to take perishable foodstuffs as dry rations, to eat food with unwashed hands, especially after collecting poisonous plants. It is not to eat unwashed berries and fruits.

9. It is strictly forbidden to bathe in the open water, especially in places not suitable for this purpose.

10. It is forbidden to climb trees, and also to go down the steep slopes of ravines and steep riverbanks.

11 It is forbidden to touch animals, including pets (they can be carriers of infections). Do not tease animals, especially big ones (dogs, cows, horses, camels).

12. It is desirable to have repellent against insects and ticks, especially when visiting the places of their mass withdrawal.

13. In case of tick, spider, insect or snake bite, immediately inform the instructor to provide first aid.

14. After the excursion, the body should be examined in order to remove ticks.

**"STUDENT BRIEFING CHECKLIST
ON OCCUPATIONAL HEALTH AND SAFETY"**

I, student _____group of the 2nd year of the Faculty of Pharmacy,
speciality 33.05.01 Pharmacy

(Full name)

acquainted with the rules of behaviour (safety and labour protection) in the laboratory, experimental, and during the field practical training during the practice "Training practice in botany". I undertake to observe them and fulfil the lawful orders of the responsible teacher.

Student's signature

_____/_____/

The teacher who conducted the briefing

_____/_____/

Date

Chronological practice diary

PROTOCOL №____

Date _____

Thematic block : _____

Content (progress of work): _____

Completion of individual assignments:

Teacher _____ / _____ /

Then following the herbarium notebook on plant morphology (inflorescences, leaf morphology, root systems, position of shoots in space). The students make a mini-collection in the diary depending on the theme of the excursion: simple and compound leaves, the shape of the leaf blade, the shape of the leaf margin, the degree of dissected of leaf blade, etc., inflorescences, root systems, fruits, the position of shoots in space. All this is dried with an iron, pasted into a diary and arranged in a certain way:

For example: Inflorescences. The classification of inflorescences is written down, leaving after each name a free place for a drawing and object, opposite to the name of each inflorescence we make a schematic drawing as on the table or in the textbook and glue dried sample of such inflorescence and sign the name of the plant which you have glued as an example.

In the herbarium notebook should be drawn, glued and signed:

- types of root systems.
- types of shoot branching
- types of leaf arrangement
- types of leaves according to the number of leaf blades (simple, ternate, pairedpinnate, unpairedpinnate, palmate, etc.)
- leaf types according to the shape of the leaf blade
- leaf types according to the degree of leaf blade dissection
- leaf types according to the structure of the leaf base (petiolate, sessile, with stipules, with a sheath, with a ocrea)
- leaf types according to venation of leaf
- leaf types according to the shape of the base and the apex of the leaf blade.
- types of leaves according to the shape of the leaf blade margin
- types of inflorescences a) botryoid inflorescences, b) cymoid inflorescences, c) thyrses

- types of fruits (only dry and small fruits can be glued here, the rest can be replaced by pictures and photos)

In addition, on some excursions we collect objects to examine under a microscope. These objects are dissected in the laboratory, micropreparations are made of them, examined under a microscope, and sketched in a herbarium notebook. All tissues and structures that are visible under a microscope are marked in the drawings, as they were in the botany class.

The diary then describes the communities according to the plan above.

Next, the descriptions of the plants are posted. Descriptions of plants that do not grow in the practice area or are not vegetating during the practice period will not be accepted. The plant can be dried and glued at the beginning of the description, or you can glue a picture of it. A total of 5 plants are described for each practice day (including field trip days and classroom days).

The description of plants is carried out according to a plan:

Plan for describing a plant.

1. The name of the plant (Russian (English) and Latin). You can also give the folk name.
2. The systematic belonging of the plant (division, class, order, family, genus).
3. The confinement of a plant to a particular plant community and its role in this community.
4. Ecological groups to which the given plant belongs in relation to light, moisture, chemical and mechanical composition of soil, etc.
5. Life form according to classified of Raunkiaer (Christen Raunkiaer).
6. Life form according to classified of Serebryakov (Serebryakov I. G.)
6. Biological group by lifespan.
7. Overall size of the plant.

8. Morphological features:

a) Stem: stem type (erect, creeping, climbing, etc.); degree of woodiness; covering tissue and presence of lenticels, pubescence, cuticle, waxy plaque on it; form of stem cross section (round, tetrahedral, trihedral, etc.); length of internodes; presence of stem and shoot modifications (if any; notes which). Diameter of stem.

b) Leaves: type of leaf (if the plant has several types of leaves, all of them should be described); form of leaf blade; form of leaf margin; type of venation of leaf; type of attachment to stem; presence of stipules, sheath or ocrea; presence and type of pubescence; color of upper and lower surface; presence of leaf modifications (if any; notes which); leaf position on the plant. Size of leaves.

c) Root system: type of root system; degree of development; presence of modifications (if any; notes which ones); presence of symbionts (mycorrhiza, nodules of nitrogen-fixing bacteria). Size of root system.

d) Generative organs (for flowering plants):

1) Flower. Flower formula and diagram; presence of different types of flowers (bisexual, unisexual, sterile, cleistogamous); dioecious or monoecious plant; type of flower symmetry (actinomorphic, zygomorphic, irregular); type of pollination; adaptation to type of pollination; presence and color of corolla, number and shape of petals, presence and degree of their fusion, shape of corolla; presence and color of calyx, number of sepals, their shape and pubescence, presence and degree of their fusion. Presence of spurs, appendages, nectaries (indicate from what organs they were formed); number of stamens, their location in relation to petals of corolla, presence of their fusion; number of pistils, number of carpels forming each pistil (determined by the number of locules of ovary, styles or stigma); ovary type in relation to the place on receptacle (lower, upper, middle); flower size.

2) Position of flowers on the plant (apical, axillary, sessile, on pedicels, alone, put together in inflorescences); length of pedicels, presence of general or

separate pedicels; type of inflorescences; presence of general and private inflorescences; sizes of inflorescences, quantity of flowers in inflorescences (if their number is definite).

3) Fruit. Fruit type according to gynoeceum type; dry or juicy; true or false; character of fruit surface (smooth, ribbed, pubescent); type of fruit (berry, knuckle, nut, etc.)

On each excursion students, with the help of the teacher, make a geobotanical description of plant communities in diaries. The key points in which the description of communities is obligatory are established. Such points should be: steppe community; forest community floodplain oak woodland, floodplain sedge woodland (poplar forest), ravines oak woodland with admixture of alder and aspen, dry ravines oak woodland; water and water-related plant communities, floodplain meadows. The communities are described according to the plan:

Plan for describing a plant community.

1. Name of the plant community. Here you should give an expanded name, which is a part of its characteristic (floodplain lily of the valley oakery, fescue- white sagebrush steppe, flooding hay meadow, etc.).

2. Habitat. An area occupied by a plant community and its character eco-logical conditions. Here it is necessary to specify 1) relief (elevation, depression, slopes, plain), groundwater occurrence (deep, shallow); 2) mechanical and chemical composition of soil (sandy, clay, gray, chestnut, saline, non-saline); 3) exposure to the sun (north, south); 4) susceptibility of the territory to flooding during high water; 5) degree and regularity of moisture (arid conditions, swampy, moderate humidification conditions); 5) location in space (nearest settlement, river, elevation and distance to them), geographical coordinates.

3. Species composition and quantitative participation of species in phytocoenoses. Make a list of the higher plant species found in the community. Identify dominant species (represented by very large numbers of specimens).

4. Level structure of plants community. Determine the number of level in the plant community and describe each of them. When describing the level it is necessary to indicate which plants form it, its height, the degree of closeness (density). Identify dominant species for each level. Identify the phase of development of dominant species (flowering, fruiting, budding, blooming of leaves, death of the above-ground part, etc.). Identify to which ecological group the plants that make up each level of the community belong. Notes the out-of-level elements. Identify the main life forms of plants that make up each level (trees, shrubs, lianas, semi-shrubs, dwarf semi-shrubs, annual or perennial grasses)

5. Find objects indicating the parasitism of some plants at the expense of others.

6. Notes examples indicating human influence on a given community.

7. Notes the medicinal plants you have found in this plants communities.

List of formed competences and assessment of their mastering

№	Cipher	Competence Text	Level of mastery	Signature of the teacher
1	YK-1.1.3	Knows the methods of critical analysis and evaluation of modern scientific and practical achievements		
2	YK-1.2.1	Able to collect and summarise data on topical issues related to the professional field		
3	YK- 1.2.2	Is able to search for information and solutions based on action, experimentation and experience		
4	YK-1.2.3	Is able to analyse a problem situation as a system, identifying its components and the links between them		
5	YK-1.3.1	Possesses the experience of forming evaluative judgements in solving problematic professional situations		
6	YK-1.3.2,	Possesses the skill of developing a strategy to achieve the set goal as a sequence of steps, anticipating the result of each of them and assessing their impact on the external environment of the planned activity and on the relationships between the participants of this activity.		
7	YK-8.1.1	Knows the consequences of the impact of harmful and hazardous factors on human and animal organisms and the natural environment		
8	YK-8.1.2	Knows methods and ways of protection from harmful and hazardous factors in everyday life and professional activities		
9	YK-8.2.1	Is able to make decisions to ensure security in different environments, including the threat and occurrence of emergencies and military conflicts		
10	YK-8.3.1	Possesses skills to ensure safety in the human-environment system		
11	OK-1.1.1	Knows basic biological methods of analysis for the development, research and expertise of medicines and medicinal plant raw materials.		
12	OK-1.2.1	Knows how to apply basic physico-chemical		

		and chemical methods of analysis for the development, research and expertise of medicines, medicinal plant raw materials and biological objects		
13	OK-1.3.1	Uses mathematical methods and performs mathematical processing of data obtained in the course of drug development, as well as research and examination of drugs, medicinal plant raw materials and biological objects.		
14	ПК-4.1.1	Knows the methodology of pharmaceutical analysis of pharmaceutical substances, excipients and medicinal products for medical use for factory production in accordance with quality standards.		
15	ПК-4.2.1	Knows how to supervise the preparation of reagents and titrated solutions.		
16	ПК-4.3.1	Possesses the skills of registration, processing and interpretation of the results of conducted tests of medicines, raw materials and packaging materials		

The following designations are used to characterise the level of mastering:

- 1 - "*Familiar*" (recognising previously studied objects, properties).
- 2 - "*Reproductive*" (performing activities according to a model, instructions or under guidance).
- 3 - "*Productive*" (planning and independent performance of activities, solving problem tasks).