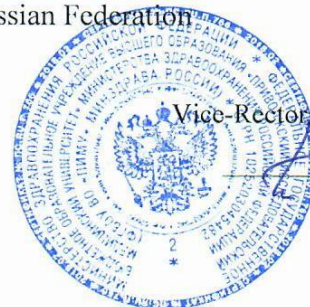


Federal State Budgetary Educational Institution of Higher Education  
"Privolzhsky Research Medical University"  
Ministry of Health of the Russian Federation



APPROVED  
Vice-Rector for Academic Affairs  
E.S. Bogomolova  
31 August 2021

## WORKING PROGRAM

Name of the academic discipline: **BOTANY**

Specialty: **33.05.01 PHARMACY**

Qualification: **PHARMACIST**

Department: **BIOLOGY**

Mode of study: **FULL-TIME**

Labor intensity of the academic discipline: **252 academic hours**

Nizhny Novgorod  
2021

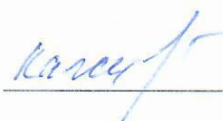
The working program has been developed in accordance with the Federal State Educational Standard for the specialty 33.05.01 Pharmacy, approved by Order of the Ministry of Science and Higher Education of the Russian Federation No. 219 dated March 27, 2018.

**Developers of the working program:**

Kalashnikov Ilya Nikolaevich, Head of the Biology Department PRMU, PhD  
Ermolina Ekaterina Alexandrovna, senior teacher at the Department of Biology PRMU

The program was reviewed and approved at the department meeting (protocol No.8, August, 17, 2021)

Head of the Department,  
Candidate of Biological Sciences, Head of the Biology Department  
(I.N.Kalashnikov)



August, 17,2021

AGREED

Deputy Head of EMA ph.d. of biology \_\_\_\_\_ Lovtsova L.V.



August, 17,2021

**1. The purpose and objectives of mastering the academic discipline botany** (hereinafter – the discipline):

1.1. The purpose of mastering the discipline (*participation in forming the relevant competencies*) is to participate in the formation of general professional competencies: OPK-1. Capable of using basic biological, physico-chemical, chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines

**1.2. Requirements to the deliverables of mastering the discipline**

As a result of completing the discipline, the student should

**Know:**

- biological patterns of plant life development;
- a variety of morphological and anatomical structures of vegetative and generative organs of the plant;

- plant groups, including medicinal species studied in the course of pharmacognosy;

- diagnostic signs of plants used in the determination of raw materials;

- the main provisions of the doctrine of the cell;

- the main types of reproduction of organisms and their development cycles;

- fundamentals of systematics of prokaryotes, fungi, lower and higher plants;

- rare and endangered plant species subject to protection and listed in the "Red Book".

**Be able to:**

- independently work with botanical literature, analyze what you read and use the results to solve practical problems;

- work with a microscope, binoculars;

- prepare the necessary micro-preparations, using the appropriate chemical reagents;

- carry out morphological and anatomical description of tissues and organs of medicinal plants;

- to determine medicinal plant species by the complex of morphological and diagnostic signs;

- to recognize the age characteristics of plants in the process of ontogenesis;

- rational use and protection of medicinal plant species

**Possess:**

- basic information conversion technologies: text, tabular editors, Internet search;

- botanical conceptual apparatus; - microscopy technique of plant objects;

- skills of making a preliminary diagnosis of the systematic position of the plant;

- methods of plant research in order to diagnose medicinal plants and their impurities.

**2. Position of the academic discipline in the structure of the General Educational Program of Higher Education (GEP HE) of the organization.**

2.1. The discipline botany refers to the core part (*or the part formed by the participants of educational relations*) of Block 1 of GEP HE (Academic discipline index).

The discipline is taught in 1 and 2 semester/1st year of study.

**2.2. The following knowledge, skills and abilities formed by previous academic disciplines are required for mastering the discipline:**

- biology, school course

- chemistry, school course

**2.3. Mastering the discipline is required for forming the following knowledge, skills and abilities for subsequent academic disciplines:**

biology, microbiology, biological chemistry, pharmacognosy, pharmacology, pathology, physiology, philosophy, first aid, life safety.

**3. Deliverables of mastering the academic discipline and metrics of competence acquisition**

Mastering the discipline aims at acquiring the following universal (UC) or/and general professional (GPC) or/and professional (PC) competencies

№	Competence code	The content of the competence (or its part)	Code and name of the competence acquisition metric	As a result of mastering the discipline, the students should:		
				know	be able to	possess
1.	GPC-1	Capable of using basic biological, physico-chemical, chemical, mathematical methods for the development, research and examination of medicines, the manufacture of medicines	IA-1 <sub>GPC-1</sub> Applies basic biological methods of analysis for the development, research and examination of medicines and medicinal plant raw materials	- biological patterns of plant life development; - a variety of morphological and anatomical structures of vegetative and generative organs of the plant; - plant groups, including medicinal species studied in the course of pharmacognosy; - diagnostic signs of plants used in the determination of raw materials; - the main provisions of the doctrine of the cell; - the main types of reproduction of organisms and their development cycles; - fundamentals of systematics of prokaryotes, fungi, lower and higher plants; - rare and endangered plant species subject to protection and listed in the "Red Book".	independently work with botanical literature, analyze what you read and use the results to solve practical problems; - work with a microscope, binoculars; - prepare the necessary micro-preparations, using the appropriate chemical reagents; - carry out morphological and anatomical description of tissues and organs of medicinal plants; - to determine medicinal plant species by the complex of morphological and diagnostic signs; - to recognize the age characteristics of plants in the process of ontogenesis; - rational use and protection of medicinal plant species.	basic information transformation technologies: text, tabular editors, Internet search; - botanical conceptual apparatus; - microscopy technique of micro-preparations of plant objects; - skills of making a preliminary diagnosis of the systematic position of the plant; - methods of plant research in order to diagnose medicinal plants and their impurities.

#### 4. Sections of the academic discipline and competencies that are formed when mastering them

№	Competence code	Section name of the discipline	The content of the section in teaching units
1	GPC-1	Fundamentals of cytology	<ol style="list-style-type: none"> <li>1. Botany as a biological science. The main stages of the development of botany. The importance of botany for pharmacy.</li> <li>2. Prokaryotic cell on the example of cyanobacteria.</li> <li>3. The structure of the eukaryotic cell. Fundamental differences between plant, fungal and animal cells. A plant cell.</li> <li>4. Ergastic substances. Carbohydrates, proteins, fats, their role in the vital activity of the cell. The value of spare substances for pharmacy and medicine.</li> <li>5. Excretory substances. The use of crystals in pharmacy for the diagnosis of plant raw materials. Essential oils, balms, resins, gums, their use in pharmacy and medicine</li> </ol>
		Plant tissues, structure, functions and topography	<ol style="list-style-type: none"> <li>1. The concept of plant tissues. Principles of classification of plant tissues.</li> <li>2. A group of educational tissues (meristems). Features of the structure of meristem cells and their localization in the plant body.</li> <li>3. A group of integumentary tissues. Their origin, localization in the plant body, functions and structural features.</li> <li>4. A group of conductive tissues. Their origin, localization in the plant body, functions and structural features.</li> <li>5. A group of mechanical fabrics. Their origin, localization in the plant body, functions and structural features.</li> <li>6. Group of basic tissues: assimilation, storage, respiratory (aerenchyma). Their origin, localization in the plant body, functions and structural features.</li> <li>7. A group of secretory tissues. General characteristics, classification and functions. Application of plant isolation products in medicine and national economy.</li> </ol>
		Organs of higher plants. Morphological and anatomical structure	<ol style="list-style-type: none"> <li>1. The concept of organs in plants. Vegetative and reproductive organs.</li> <li>2. The stem is the axial structural element of the shoot. Stem functions. Anatomical structure of the stem. Differences in the structure of the stem in dicotyledonous and monocotyledonous plants. Differences in the features of the anatomical structure of dicotyledonous and coniferous trees. The biological role of wood.</li> <li>3. The leaf is a lateral structural element of the shoot. Parts of the sheet. Simple and complex leaves. Anatomical structure of the leaf in connection with its functions. Dorsoventral, isolateral leaves. A leaf of a coniferous plant. Dependence of morphological features and anatomical structure of the leaf on external factors. Light and shadow leaves. Leaf mosaic. Metamorphoses of a leaf and its parts</li> </ol>

		<p>4. The root. Root zones. The primary anatomical structure of the root. The appearance of cambium and the transition to the secondary structure of the root in dicotyledonous plants. Secondary structure of the root. Features of the anatomical structure of roots in herbaceous and woody dicotyledonous and coniferous plants. Features of the anatomical structure of thickened roots and tubers. Specialization and metamorphosis of roots.</p> <p>5. Reproductive organs of angiosperms: flower and fruit. The structure of the flower and its functions. Androceum. Gynoecium. Pollination and fertilization. The phenomenon of apomixis. Modern ideas about the origin of the angiosperm flower.</p> <p>6. The biological role of the inflorescence. Classification of inflorescences.</p> <p>7. Fruits. Classification of fruits based on the structure of the guinea worm: apocarpia, monocarpia, cenocarpia and pseudomonocarpia. The fruits are fractional and segmented, juicy and dry, single-seeded and multi-seeded, opening and non-opening. Coplodia. Methods of distribution of fruits and seeds.</p>
	Systematics of plant organisms	<p>1. Taxonomy. Definition of taxonomy. Taxonomy tasks. Taxonomic categories and taxa, binary nomenclature.</p> <p>2. Eukaryote domain. The main divisions of algae.</p> <p>3. The kingdom of Fungi. The main divisions of fungi, lichens and their characteristics.</p> <p>4. The kingdom of the plant. General characteristics of plants. Features of the structure of the reproductive organs.</p> <p>5. Department of bryophytes (MOSESSES).</p> <p>6. Department of lycopodium-like.</p> <p>7. Department of equisetum-like.</p> <p>8. Department of fern-like.</p> <p>9. Department of gymnosperms.</p> <p>10. Department angiosperms, or flowering plants</p> <p>11. A systematic review of the families of the angiosperms</p>
	Elements of plant physiology	Plant growth and development. Phytohormones. Photosynthesis.

### 5. Volume of the academic discipline and types of academic work

Type of educational work	Labor intensity		Labor intensity (AH) in semesters	
	volume in credit units (CU)	volume in academic hours (AH)	1	2
Classroom work, including	<b>3,6</b>	<b>130</b>		
Lectures (L)	0,8	28	16	12
Laboratory practicum (LP)*	2,8	102	50	52
Practicals (P)				
Seminars (S)				
Student's individual work (SIW)	<b>2,4</b>	<b>86</b>	42	44
Mid-term assessment				
credit/exam ( <i>specify the type</i> )	1	36		36
<b>TOTAL LABOR INTENSITY</b>	<b>7</b>	<b>252</b>	<b>108</b>	<b>144</b>

## 6. Content of the academic discipline

### 6.1. Sections of the discipline and types of academic work

№	Name of the section of the academic discipline	Types of academic work* (in AH)					
		L	LP	P	S	SIW	total
1	Fundamentals of cytology	4	10	-	-	10	24
2	Plant tissues, structure, functions and topography	4	10	-	-	16	30
3	Organs of higher plants. Morphological and anatomical structure	8	30	-	-	16	54
4	Systematics of plant organisms	12	52	-	-	38	102
5	Elements of plant physiology	-	-	-	-	6	6
	Exam						36
	<b>TOTAL</b>	<b>28</b>	<b>102</b>	<b>-</b>	<b>-</b>	<b>86</b>	<b>252</b>

\* - L – lectures; LP – laboratory practicum; P – practicals; S – seminars; SIW – student's individual work.

### 6.2. Thematic schedule of educational work types:

#### 6.2.1 Thematic schedule of lectures

№	Name of lecture topics	Volume in AH	
		1 semester	2 semester
1	Botany is a biological science. A plant is a living organism. The main stages of the development of botany. Sections of botany. Plants and humans. The importance of botany for pharmacy. The structure of the plant cell.	2	
2	Protoplast and its derivatives: cell wall and vacuole. Plastids. Ergastic substances.	2	
3	Plant tissues. Educational fabrics. Apical, lateral, insertion and traumatic meristems. Primary and secondary meristems. Integumentary tissues. The primary integumentary tissue is the epidermis. The secondary integumentary tissue is the periderm. The tertiary integumentary tissue is the crust.	2	
4	Excretory tissues. Glandular hairs, hydathodes, nectaries, milkweeds, receptacles of secretions. Mechanical fabrics. Collenchyma, sclerenchyma. Distribution of mechanical tissues in the plant body. Works with . Schwendener and V.F. Razdorsky. Conductive fabrics.	2	
5	Root: physiological functions and anatomical structure. Root zones. The primary anatomical structure of the root (monocotyledons). Secondary anatomical structure of the root (dicotyledonous). Perennial roots of woody plants. Metamorphoses of the root. The structure of root crops.	2	
6	The stem. The primary anatomical structure of the stem. Stellar theory. Types of anatomical	2	

	structure of the stem of a monocotyledonous plant (corn, rye). Anatomical structure of the woody stem of a monocotyledonous plant (dracaena, yucca).		
7	The stem. Types of anatomical structure of the herbaceous stem of a dicotyledonous plant (buttercup, sunflower, flax). Anatomical structure of a woody stem (linden). Annual rings. Features of the structure of the stem of gymnosperms (pine). Woody and herbaceous flowering plants and their evolutionary relationships	2	
8	Leaf: functions, origin, morphology. Anatomical structure of dorsoventral (Japanese camellia), isolateral (millet) and radial (pine) types of leaf blade. Leaf series, leaf formations, heterophyllia, anisophyllia, xeromorphism of leaves. Metamorphoses of leaves. Leaf fall and its biological significance.	2	
9	Systematics of plants. Taxonomic categories. Signs of higher and lower plants. General characteristics of algae. Departments: green, brown, diatom, brown, red algae.		2
10	The kingdom of Fungi. Features of the structure. Mycelium. Types of reproduction of fungi. Fungi are lower and higher. Department of chytridiomycota. The structure of the body. Representatives. Department of zygomycota. The order of the flour. White head mold – mucor. Features of development and reproduction. Parasitic zygomycetes. Department of ascomycetes (marsupial fungi). Golosumchaty and frugosumchaty ascomycotes. Medicinal species of marsupial mushrooms. Ergot, the cycle of its development, its use in medicine. Department of basidiomycota. Reproduction. Edible and poisonous mushrooms. Birch fungus – chaga and its use in medicine. Ecology of Fungi.		2
11	The origin of higher plants. Morphological and anatomical differentiation of higher plants in connection with landfall. Hypotheses of the origin of higher plants and the oldest groups of plants on land. Mossy – a special line of plant evolution. General characteristics. Classes of mosses: anthocerotid, hepatic and leaf-stemmed mosses. Their general characteristics. Body structure and reproduction (sphagnum, cuckoo flax). The role of mosses in nature and their use by humans.		2
12	General characteristics of the plan-shaped on the example of the mace-shaped plan. Baranets, other types of plauns and their use in medicine. General characteristics of horsetail-like on the example of horsetail field. General characteristics of modern ferns on the example of the male thyroid gland. The use of horsetails, ferns in medicine.		2



13	Aromorphoses of seed plants. Department of gymnosperms. General characteristics, biology of reproduction on the example of pine. Classes of modern gymnosperms		2
14	Angiosperms Department. Morphology of generative organs. Types and evolution of guinea. The structure of the ovule. Mega- and microsporogenesis. Gametogenesis. Double fertilization. Classification of fruits. The structure of the pericarp. Real and false fruits. Parthenocarpy. Morphogenetic classification of fruits.		2
	TOTAL (total - AH)	16	12

6.2.2. The thematic plan of laboratory practicums (*if this type of classes is stipulated in the curriculum*)

№	Name of laboratory practicums	Volume in AH	
		1 semester	2 semester
1	A microscope. The structure of the prokaryotic cell. Cyanobacteria. The structure of the eukaryotic cell. The cell wall. Plastids.	5	
2	Ergastic substances of the plant cell. Final lesson on the topic: "Cytology"	5	
3	Dermal tissues. Mechanical tissues.	5	
4	Conductive tissues and conductive bundles. Final lesson on the topics "Plant tissues, structure, functions and topography".	5	
5	Anatomical structure of the root. Metamorphoses of roots	5	
6	The structure of the stem of herbaceous plants.	5	
7	The structure of the woody stem.	5	
8	Anatomical structure of the leaf. Metamorphoses of a leaf. Final lesson on the topic: "Anatomy of vegetative organs"	5	
9	Morphology of escape. Types of branching. The kidney is like the germ of an escape. Metamorphoses of shoots.	5	
10	Morphology of the leaf. Leaf arrangement. Final lesson on the topic: "Morphology of vegetative organs"	5	
11	Systematics of plants. Department of Green Algae. Departments: Brown algae. Red algae. Diatoms.		5
12	The Kingdom of Fungi. Departments of Oomycota, Zygomycota. Ascomycetes and Basidiomycetes.		5
13	Department of Lichens. <b>Final lesson on the topic: "Algae. Fungi.. Lichens"</b>		5
14	Высшие растения. Отделы Моховидные, Плауновидные.		5
15	The departments are Horsetail-shaped and Fern-shaped.		5

	<b>Final lesson on the topic: "Higher spore plants"</b>		
16	Seed plants. Department of Gymnosperms. The development cycle. Angiosperms. Micro- and megasporogenesis. Double fertilization. Morphology of androceae. Types of guinecea.		5
17	Morphology of the flower. Formulas and diagrams of flowers. Morphology and classification of inflorescences .		5
18	Fruit morphology and fruit classification. <b>Final lesson on the topic: "Propagation of seed plants"</b>		5
19	Overview of Angiosperm dicotyledonous plant families.		5
20	Overview of Angiosperm monocotyledonous plant families. <b>Final lesson on the topic: "Systematics of flowering plants"</b> .		7
	TOTAL (total - 102AH)	50	52

### 6.2.3. Thematic plan of practicals

The curriculum is not provided.

### 6.2.4. Thematic plan of seminars (*if this type of classes is stipulated in the curriculum*)

The curriculum is not provided.

### 6.2.5. Types and topics of student's individual work (SIW)

№	Types and topics of SIW	Volume in AH	
		1 semester	2 semester
1	– work with lecture material, providing for the study of lecture notes and educational literature;	7	5
2	– search (selection) and review of literature and electronic sources of information on an individually given course problem;	3	3
3	– completing homework for the lesson;	10	10
4	– doing homework (problem solving, on-line testing);	5	5
5	– study of the material submitted for independent study (separate topics);	3	3
6	– preparation for laboratory work, practical and seminar classes;	8	8
7	-preparation for the control work;	6	6
8	– preparation for the test and attestations.	-	5
	TOTAL (total - AH)	42	44

**7. Types of assessment formats for ongoing monitoring and mid-term assessment**

№	Semester No.	Types of control		Name of section of academic discipline	Competence codes	Assessment formats		
						types	number of test questions	number of test task options
1.	1	Current monitoring	Control of mastering the topic	Fundamentals of cytology	GPC-1	Computer testing	30	Unlimited
			Monitoring the student's individual work		GPC-1	Terminological dictation	10	50
			GPC-1		Control question	10	8	
2	1	Current monitoring	Control of mastering the topic	Plant tissues	GPC-1	Computer testing	30	Unlimited
			Monitoring the student's individual work		GPC-1	Control question	10	8
			GPC-1		Situational tasks	1	10	
			GPC-1		Terminological dictation	10	50	
3	1	Current monitoring	Control of mastering the topic	Anatomy of vegetative organs	GPC-1	Computer testing	30	Unlimited
			Monitoring the student's individual work		GPC-1	Control question	2	10
			GPC-1		Situational tasks	1	20	

			work		GPC-1	Terminological dictation	10	50
4	1	Current monitoring	Control of mastering the topic	Morphology of vegetative organs	GPC-1	Computer testing	30	Unlimited
					GPC-1	Control question	10	8
			Monitoring the student's individual work		GPC-1	Situational tasks	1	15
					GPC-1	Terminological dictation	10	50
5	2	Current monitoring	Control of mastering the topic	Systematics of plant organisms	GPC-1	Computer testing	30	Unlimited
6	2	Current monitoring	Control of mastering the topic	Elements of plant physiology	GPC-1	Computer testing	30	Unlimited
7	1,2	Mid-term assessment	Exam/Credit	All sections of the discipline	GPC-1	Computer testing	150	Unlimited
					GPC-1	Control question	3	90

## 8. Educational, methodological and informational support for mastering the academic discipline (printed, electronic publications, the Internet and other network resources)

### 8.1. Key literature references

№	Name according to bibliographic requirements	Number of copies	
		at the department	in the library
1	Mauseth, J. D. Botany : An Introduction to Plant Biology / J. D. Mauseth. – 6th ed. – S.I. : Jones and Bartlett Learning, 2017. – XX, 820 p. : il. – ISBN 9781284077537.	-	31
2	Beentje, H. The Kew Plant Glossary : an illustrated dictionary of plant terms / H. Beentje. – 2nd ed. – S.I. : Royal Botanic Gardens Kew, 2016. – 184 p. : ill. – ISBN 978-1-8424-6604-9.	-	2

## 8.2. Further reading

№	Name according to bibliographic requirements	Number of copies	
		at the department	in the library
1	Fundamentals of Pharmacognosy and Phytotherapy / M. Heinrich, J. Barnes, Garcia J. M. P. [et al.]. – 3rd ed. – [S. I.] : Elsevier, 2018. – XVI, 359 p. – ISBN 978-0-7020-7030-3. Ссылка на библиографическое описание: <a href="http://nbk.pimunn.net/MegaPro/UserEntry?Action=Link_FindDoc&amp;id=212987&amp;idb=0">http://nbk.pimunn.net/MegaPro/UserEntry?Action=Link_FindDoc&amp;id=212987&amp;idb=0</a>	-	30

## 8.3. Electronic educational resources for teaching academic subjects

### 8.3.1. Internal Electronic Library System of the University (IELSU)

№	Name of the electronic resource	Brief description (content)	Access conditions	Number of users
	Internal Electronic Library System (EBS) of PIMU	The works of the staff of the ADMU (textbooks, manuals, collections of tasks, manuals, laboratory work, monographs, etc.)	Access by individual login and password from any computer and mobile device	Not limited

### 8.3.2. Electronic educational resources acquired by the University and Open access resources

<http://nbk.pimunn.net/MegaPro/Web>

## 9. Material and technical support for mastering an academic discipline

### 9.1. List of premises for classroom activities for the discipline

1. Study rooms equipped with computers with Internet access, cabinets for storing microscopic equipment, cabinets for storing micro- and macro-preparations, study tables, laboratory equipment and equipment.

2. Lecture hall.

### 9.2. List of equipment for classroom activities for the discipline

1. Laboratory equipment: microscopic equipment (microscopes and magnifiers)

2. Technical equipment: multimedia complexes (PC or laptop, projector, screen, presenters), interactive whiteboard.

Sets of slides, tables, diagrams, multimedia visual materials on various sections of the discipline. Micro- and macro-preparations, dummies. Situational tasks, test tasks on the studied topics,

- computer presentations on all topics of lecture and practical courses,

- educational videos.

3. Information stands for sections of the Botany course.

### 9.3. A set of licensed and freely distributed software, including domestic production

Item no.	Software	number of licenses	Type of software	Manufacturer	Number in the unified register of Russian software	Contract No. and date
1	Wtware	100	Thin Client Operating System	Kovalev Andrey Alexandrovich	1960	2471/05-18 from 28.05.2018
2	MyOffice is Standard. A corporate user license for educational organizations, with no	220	Office Application	LLC "NEW CLOUD TECHNOLOGIES"	283	without limitation, with the right to receive updates for 1 year.

	expiration date, with the right to receive updates for 1 year.					
3	LibreOffice		Office Application	The Document Foundation	Freely distributed software	
4	Windows 10 Education	700	Operating systems	Microsoft	Azure Dev Tools for Teaching Subscription	
5	Yandex. Browser		Browser	«Yandex»	3722	
6	Subscription to MS Office Pro for 170 PCs for FGBOU VO "PIMU" of the Ministry of Health of Russia	170	Office Application	Microsoft		23618/HN10030 LLC "Softline Trade" from 04.12.2020

**10. List of changes to the working program (to be filled out by the template)**

Federal State Budgetary Educational Institution of Higher Education  
 "Privolzhsky Research Medical University"  
 Ministry of Health of the Russian Federation  
 (FSBEI HE "PRMU" of the Ministry of Health of Russia)

Department of  
*Name of the department*

**CHANGE REGISTRATION SHEET**

working program for the academic discipline  
***NAME OF THE ACADEMIC DISCIPLINE***

Field of study / specialty / scientific specialty: \_\_\_\_\_

*(code, name)*

Training profile: \_\_\_\_\_

*(name) - for master's degree programs*

Mode of study: \_\_\_\_\_

*full-time/mixed attendance mode/extramural*

Position	Number and name of the program section	Contents of the changes made	Effective date of the changes	Contributor's signature
1				

Approved at the department meeting  
Protocol No. \_\_\_\_\_ of \_\_\_\_\_ 20\_\_

Head of the Department  
\_\_\_\_\_ / \_\_\_\_\_  
department name, academic title                      signature                      print name