

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



APPROVED

*E.S. Bogomolova*  
Vice-Rector for Academic Affairs

E.S. Bogomolova

*31 August* 2021

## WORKING PROGRAM

Name of the academic discipline: **INFORMATION TECHNOLOGY IN PHARMACY**

Specialty: 33.05.01 PHARMACY

Qualification: PHARMACIST

Department: MANAGEMENT AND ECONOMICS OF PHARMACY AND PHARMACEU-  
TICAL TECHNOLOGY

Mode of study: FULL-TIME

Labor intensity of the academic discipline: 36 **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 Education and Science of the Russian Federation No. 219 of March 27, 2018.

**Developers of the working program:**

Alena Anatolievna Ponomareva, PhD in pharmaceutical sciences, associate professor of the Department of management and economics of pharmacy and pharmaceutical technology

The program was reviewed and approved at the department meeting (protocol No.9, of April 29, 2022)

Acting head of the Department,  
PhD in pharmaceutical sciences



I.V. Spitskaya

"April 29", 2021.

AGREED  
Deputy Head of the EMA



L.V. Lovtsova

(signature)

1 June 2021

**1. The purpose and objectives of mastering the academic discipline «INFORMATION TECHNOLOGY IN PHARMACY» (hereinafter – the discipline):**

1.1. The purpose of mastering the discipline: (*participation in forming the relevant competencies*).

1.2. Tasks of the discipline:

1. universal competences (UC-1.2, UC-1.3);
2. general professional competencies (GPC-6).

1.3. Requirements to the deliverables of mastering the discipline

As a result of completing the discipline, the student should

**Know:**

- basic theoretical provisions of information technology in pharmacy;
- structure of information technologies in pharmacy;
- main characteristics of information technology;
- sources of information technologies in pharmacy;
- possibilities of using the Internet for pharmaceutical business;
- problems of pharmaceutical information search;
- types of information technologies used in pharmacy;
- commercial status, versions of software products and ways of their distribution;
- use of specialized databases in the work of pharmacist;
- peculiarities of using information and reference systems for medicines;
- automation of accounting in pharmacy enterprises;
- peculiarities of using the complex of programs "1C: Enterprise-8" for pharmacy enterprises;
- peculiarities of using local networks in a pharmaceutical enterprise;
- information needs of pharmaceutical information user;
- modern communication technologies in pharmacy activity;
- peculiarities of computer security of pharmacy enterprise;
- problems of pharmaceutical information storage;
- modern technical means and digital technologies used in professional activity by pharmaceutical specialists at all stages of drug circulation
- modern medical and pharmaceutical information systems and databases used in professional activities by pharmaceutical specialists at all stages of drug circulation;
- modern medical and pharmaceutical information systems and databases used in professional activities by pharmaceutical specialists at all stages of drug circulation.

**Be able to:**

- select computer hardware for an automated workstation in a pharmacy setting;
- select an operating system for a specific pharmacy technician workstation;
- install and uninstall software products (applications);
- configure application programs at the pharmacy technician's workstation;
- use Microsoft Office Word at the pharmacy technician's workplace to enter and proofread documents, set up the program, work with the clipboard;
- prepare tables and graphic materials in the Microsoft Office Word program;
- create working templates and styles in the program "Microsoft Office Word";
- work with file managers;
- use electronic information and reference systems for medicines;
- use the systems "Consultant Plus", "Garant" and others to search for reference and legal pharmaceutical information;

- use the program complex "1C: Enterprise-8" for automation of business-production and accounting of pharmacy activities;
- search for necessary information on a local personal computer;
- to search and evaluate pharmaceutical information on the Internet;
- order goods from wholesalers using the Internet;
- use professional Internet forums to exchange pharmaceutical information;
- use instant messaging (Internet pagers) to communicate with contractors on an on-going basis;
- use e-mail in practice;
- solve applied problems of pharmacy practice with the help of Microsoft Office Excel spreadsheets;
- prepare presentations of pharmacy activities in the program "Microsoft Office Power Point";
- make an optimal choice of modern data carriers;
- use antivirus programs and firewalls for complex protection of pharmaceutical information;
- use archiving programs for regular backup of official pharmaceutical information;
- identify information needs of drug consumers, provide information and consulting services.
- Apply modern technical means and digital technologies used in professional activities by pharmaceutical specialists at all stages of drug circulation
- To apply modern medical and pharmaceutical information systems and databases used in professional activities by pharmaceutical specialists at all stages of drug circulation.

**Possess:**

- using regulatory, reference and scientific sources of pharmaceutical information to solve professional problems;
- using modern resources of information support of pharmaceutical business;
- methods of identifying information needs of different consumers of pharmaceutical products;
- information-consulting activities when dispensing medicines and other pharmaceutical products to end users;
- methods of making managerial decisions based on the results of local and global search and processing of pharmaceutical information;
- methods of organizing an automated workplace in the pharmacy;
- methods of effective work with modern office programs;
- possibilities of complex assessment of price competition on the example of Internet pharmacies;
- using reference and legal pharmaceutical information to fulfill their professional duties;
- methods of automation of office management and accounting of pharmacy activities;
- effective measures to protect pharmaceutical information from various threats;
- skills of using modern technical means and digital technologies used in professional activities by pharmaceutical specialists at all stages of drug circulation
- skills of using modern medical and pharmaceutical information systems and databases used in professional activities by pharmaceutical specialists at all stages of circulation of medicines

**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 «information technology in pharmacy» refers to the corepart of Block 1 of GEP HE.

Discipline index B1.O.8.

The discipline is studied in the 5th semester of the 3rd year of study.

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

1. introduction to the specialty;
2. economic theory;
3. mathematics;
4. informatics;
5. information support of the life cycle of medicines;
6. pharmaceutical propaedeutic practice;
7. foreign language;
8. Latin language.

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

1. medical and pharmaceutical commodity management
2. legal basics of the activity of a pharmacist;
3. pharmaceutical marketing;
4. pharmaceutical logistics;
5. pharmaceutical management;
6. project management in pharmacy;
7. promotion of goods on the pharmaceutical market;
8. organization of drug supply to the population;
9. basics of entrepreneurial activity in pharmacy;
10. state registration and expertise of medicines;
11. state control and supervision in the sphere of circulation of medicinal products;
12. pharmaceutical counseling and information (industrial practice);
13. practice in management and economics of pharmaceutical organizations (industrial practice).

**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.	UC-1.	Able to realize critical analysis of problem situations based on a systematic approach, develop strategy actions	UC-1.1. Analyzes the problem situation as a system identifying its components and connections between them	standard professional tasks	Use information, bibliographic resources in biomedical and pharmaceutical	information, bibliographic resources of biomedical and pharmaceutical terminology, information and commu-

					terminology, information and communication technologies and taking into account the basic requirements of information security	information technologies and taking into account the basic requirements of information security
2.	UC-1.	Able to realize critical analysis of problem situations based on a systematic approach, develop strategy actions	UC-1.3. Critically assesses reliability of information sources, works with conflicting information from different sources	standard professional tasks	Use information, bibliographic resources in biomedical and pharmaceutical terminology, information and communication technologies and taking into account the basic requirements of information security	information, bibliographic resources of biomedical and pharmaceutical terminology, information and communication technologies and taking into account the basic requirements of information security
3.	GPC-6.	Able to understand the principles of modern information technologies and use them to solve the tasks of professional activity	GPC-6.1. Applies modern information technologies in the interaction with parties to the circulation of medicinal products taking into account the requirements of information security	standard professional tasks	Use information, bibliographic resources in biomedical and pharmaceutical terminology, information and communication	information, bibliographic resources of biomedical and pharmaceutical terminology, information and communication technologies and taking into account

					cation technologies and taking into account the basic requirements of information security	the basic requirements of information security
4.	GPC-6.	Able to understand the principles of modern information technologies and use them to solve the tasks of professional activity	GPC-6.2. Performs an effective search for information necessary to solve the tasks of professional activity using legal reference systems and professional pharmaceutical databases	standard professional tasks	Use information, bibliographic resources in biomedical and pharmaceutical terminology, information and communication technologies and taking into account the basic requirements of information security	information, bibliographic resources of biomedical and pharmaceutical terminology, information and communication technologies and taking into account the basic requirements of information security
5.	GPC-6.	Able to understand the principles of modern information technologies and use them to solve the tasks of professional activity	GPC-6.3. Uses specialized software for mathematical processing of observational and experimental data in solving problems of professional activity	standard professional tasks	Use information, bibliographic resources in biomedical and pharmaceutical terminology, information and communication technologies and taking into	information, bibliographic resources of biomedical and pharmaceutical terminology, information and communication technologies and taking into account the basic requirements of information secu-

					account the basic requirements of information security	rity
6.	GPC-6.	Able to understand the principles of modern information technologies and use them to solve the tasks of professional activity	GPC-6.4. Applies automated information systems in the internal processes of the pharmaceutical organization, as well as for interactions with customers and suppliers	standard professional tasks	Use information, bibliographic resources in biomedical and pharmaceutical terminology, information and communication technologies and taking into account the basic requirements of information security	information, bibliographic resources of biomedical and pharmaceutical terminology, information and communication technologies and taking into account the basic requirements of information security

**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
	UC-1 GPC-6.	Information technology in pharmacy	<p>1. The concept of pharmaceutical information. The structure of pharmaceutical information. The main characteristics of pharmaceutical information. Psychological problems of using modern information technologies in pharmacy.</p> <p>2. Information needs of the user of pharmaceutical information. Sources of pharmaceutical information, their classification, search, processing. Use of normative, reference and scientific sources of pharmaceutical information to solve professional problems. The use of modern resources of information support for pharmaceutical business.</p> <p>3. Modern information technologies their use in pharmacy enterprises. Software used in pharmaceutical manufacturing, wholesale and retail.</p> <p>4. Commercial status, versions of software products and ways of their distribution. Advantages and disadvantages of</p>

			commercial and free software products. Sources of software acquisition. Strategy of purchasing software products for the pharmacy enterprise.
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### 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)	5th semester
Classroom work, including	1	36	36
Lectures (L)	0,2	6	6
Laboratory practicum (LP)*			
Practicals (P)	0,4	14	16
Seminars (S)			
Student's individual work (SIW)	0,4	14	14
Mid-term assessment			
credit		1	
<b>TOTAL LABOR INTENSITY</b>	<b>1</b>	<b>36</b>	<b>36</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	Theoretical foundations pharmaceutical information	2		5		5	12
2	Databases in the work of the caterer. Security in the pharmaceutical business	2		5		5	12
3	Searching for pharmaceutical information. Using the Internet for practical pharmacy	2		6		4	12
	<b>TOTAL</b>						<b>36</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
		5th semester
1	Information technology in pharmacy. Stages of development of information technologies.	2
2	Information technology as a means of regulating the pharmaceutical market	2
3	Computer security of the pharmacy enterprise Problems of pharmaceutical information storage	2
	<b>TOTAL (total – 6 AH)</b>	<b>6</b>

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

Laboratory practicums are not stipulated

6.2.3. Thematic plan of practicals

№	Name of topic of the practicals	Volume in AH
		5th semester
1	Reference and information support of specialists of pharmacy institutions. Pharmaceutical information and common methods of its processing. Professional information on medicines.	5
2	Methods of preparation of drug formularies Technical means and methods of processing pharmaceutical information. Search for pharmaceutical information in the legal reference system "Consultant Plus", Garant, etc.	5
3	Application of 1SPredpriyatiye 8 software package for automation of pharmacy enterprises' activity Search and evaluation of information on the Internet Practical aspects of pharmaceutical information protection Pharmaceutical information storage	6
TOTAL (total - AH)		16

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

Seminars are not stipulated

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

№	Types and topics of SIW	Volume in AH
		5th semester
1	Summary	4
2	Other types of work	12
3	TOTAL (total – 16 AH)	16

**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.	Current monitoring	Control of mastering the topic	Control of mastering the topic	Information technology in pharmacy	GPC -6 UC -1.2 UC -1.3	Control work	3
		Monitoring the student's individual work	Control of independent work of the student	Information technology in pharmacy	GPC -6 UC -1	Control work	3
2.	Mid-term assessment	Credit		Information technology in pharmacy	UC-1 GPC-6.	Credit	3

## 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	Legal informatics. Reference legal systems / S.G. Chubukova [et al]. - Moscow: Moscow State Law Academy Publishing House, 2008.-256 pp.	Electronic resource	
2	Chubarev, V.N. Pharmaceutical information / V.N. Chubarev / edited by A.P. Arzamastsev.-M.: Vilar - M, 2000.-442 pp.	Electronic resource	
3	Constitution of the Russian Federation	Electronic resource	
4	Codes of the Russian Federation	Electronic resource	
5	Regulations of the Government of the Russian Federation on drug circulation and provision of medicines to the population.	Electronic resource	
6	Laws of the Russian Federation and other regulatory documents governing the relations of subjects of drug circulation and the system of drug assistance in the Russian Federation.	Electronic resource	

### 8.2. Further reading

№	Name according to bibliographic requirements	Number of copies	
		at the department	in the library
1	Aleksandrova, E.I. 1C: Accounting 8.1 from scratch! / E.I. Aleksandrova, M.K. Beilin. - Moscow: Best Books, 2008.-272 p.	1	
2	Gribunin, V.G. Complex system of information protection at the enterprise / V.G. Gribunin, V.V. Chudovsky. Chudovsky. - Spb.: Academy, 2009. - 416 p.	1	
3	Kashayev S.M., 1C: Enterprise 8.1. Development of applied solutions / S.M. Kashaev. - M.: Viliams, 2009. - 368 p.	1	
4	Melnikov, V.P. Information security and information protection / V.P. Melnikov, S.A. Klei-	1	

	menov, A.M. Petrakov. - Spb.: Akademiya, 2009. - 336 p.	
5	Parshukova, G.B. Methods of searching for professional information / G.B. Parshukova. -M.: Profession, 2009. - 224 p.	1
6	Roshchin, S. How to quickly find the necessary information on the Internet / S. Roshchin. - Moscow: DMK Press, 2010. - 144 p.	1
7	Shangin, V.F. Complex protection of information in corporate systems / V.F. Shangin. - Moscow: Infra - M., 2010. - 592 p.	1

### 8.3. Electronic educational resources for teaching academic subjects

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

<i>№</i>	<i>Name of the electronic resource</i>	<i>Brief description (content)</i>	<i>Access conditions</i>	<i>Number of users</i>
1	Internal electronic library system (IELS) <a href="http://nbk.pimunn.net/MegaPro/Web">http://nbk.pimunn.net/MegaPro/Web</a>	Works of university teaching staff: textbooks, manuals, collections of tasks, teaching aids, laboratory works, monographs, collections of scientific works, scientific articles, dissertations, abstracts of dissertations, patents	From any computer and mobile device with individual login and password. Access mode: <a href="http://nbk.pimunn.net/MegaPro/Web">http://nbk.pimunn.net/MegaPro/Web</a>	Not limited

#### 8.3.2. Electronic educational resources acquired by the University

<i>№</i>	<i>Name of the electronic resource</i>	<i>Brief description (content)</i>	<i>Access conditions</i>	<i>Number of users</i>
1	Electronic legal reference system "Consultant Plus" (contract for free) <a href="http://www.consultant.ru">http://www.consultant.ru</a>	Regulatory documents regulating the activities of medical and pharmaceutical institutions From the scientific library computers	Access mode: <a href="http://www.consultant.ru/">http://www.consultant.ru/</a>	Not limited  Term of validity: Unlimited

#### 8.3.3 Open access resources

<i>№</i>	<i>Name of the electronic resource</i>	<i>Brief description (content)</i>	<i>Access conditions</i>
1	PubMed <a href="https://www.ncbi.nlm.nih.gov/pubmed">https://www.ncbi.nlm.nih.gov/pubmed</a>	US National Library of Medicine search engine for Medline, PreMedline databases	From any computer and mobile device. Access mode: <a href="https://www.ncbi.nlm.nih.gov/pubmed">https://www.ncbi.nlm.nih.gov/pubmed</a> Not limited
2	Scopus database <a href="http://www.scopus.com">www.scopus.com</a>	International abstract database of scientific citation	Access mode: <a href="http://www.scopus.com">www.scopus.com</a>

		From university computers, from any computer by individual login and password	Not limited
3	Web of Science Core Collection <a href="https://www.webofscience.com">https://www.webofscience.com</a>	International abstract database of scientific citation. From university computers, from any computer by individual login and password.	Access mode: <a href="https://www.webofscience.com">https://www.webofscience.com</a> Not limited

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

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

1. Classes for lectures and practical classes, equipped with multimedia and other means of training, allowing the use of simulation technologies, with standard sets of professional models (sets of protocols of clinical trials, formulary lists of LPU, price lists of distribution companies, sets of quality of life questionnaires), allowing students to master the skills and abilities, provided by professional activity, individually.

2. Simulation center "Educational pharmacy", equipped with simulation technics, which imitates the activity of pharmacy and its subdivisions (acceptance of goods, storage of goods, dispensing, pharmaceutical expertise of receipt) in the amount that allows students to master skills, provided by professional activity individually.

3. Rooms for students' independent work, equipped with computers with the ability to connect to the Internet and access to the electronic information and educational environment of the University.2.

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

1. Multimedia complex (laptop, projector, screen, TV)

2. Computer class (15 computers) with installed applications and Internet access.

### 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 expiration date, with the right to receive updates for 1 year.	220	Office Application	LLC "NEW CLOUD TECHNOLOGIES"	283	without limitation, 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 "Soft-line 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*

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**CHANGE REGISTRATION SHEET**

working program for the academic discipline

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**INFORMATION TECHNOLOGY IN PHARMACY**

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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