Federal State Autonomous Educational Institution of Higher Education
«Peoples' Friendship University of Russia»

Medical Institute

Recommended MCSD

SYLLABUS
(STUDY GUIDE)

Subject

Telemedicine

Recommended for areas of training (specialty)

31.05.01 General Medicine

Program (profile, specialization)

General Medicine

1. Goals and objectives of the discipline: acquisition, improvement of new knowledge, as well as the use of remote technologies in healthcare practice in:
- emergency and planned advisory and medical assistance to patients who are at a considerable distance from the consultant doctor, including during the liquidation of the consequences of an emergency,
- retraining and advanced training of medical personnel,
- patronage of pregnant women and patients with chronic diseases,
- monitoring of patients in a distributed home hospital,
- supervising mobile patients with personal life support hardware.

2. The place of the discipline in the structure of the OP VO:

The discipline of **Telemedicine** belongs to the natural science cycle and is included in the variable part of block 1.

Table 1 shows the previous and subsequent disciplines aimed at the formation of the discipline's competencies in accordance with the competence matrix OP VO.

Table No. 1
Previous and subsequent disciplines aimed at the formation of competencies

№ п/п	The cipher and the name of the competence		Subsequent disciplines (groups of disciplines)
	GPC-10. Being able to understand the operation principles of modern IT and use them to solve professional tasks	Medical informatics, Obstetrics and Gynecology, Therapy, Surgery, Public health and healthcare, Health Economics	OVP
Professional competencies (type of professional activity medical)			
Professional competencies (type of professional activity research)			

3. Requirements for the results of mastering the discipline:
The process of studying the discipline is aimed at the formation of the following competencies:

No

Competence	Title of competence	Indicators of achievement of competencies
GPC-10	GPC-10. Being able to understand the operation principles of modern IT and use them to solve professional tasks	GPC-10.1. Being able to use information technology in professional activity. GPC-10.2 Being able to observe the information security rules in professional activity. GPC-10.3. Being able to use information and communication technologies, including applied software for general and special purposes in dealing with professional tasks.

As a result of studying the discipline, the student must:

To know:
Theoretical bases of introduction and use of information and telemedicine systems in the medical and diagnostic process; regulatory and legal bases of telemedicine activity; basic principles of medical information protection; main types of electronic services in the field of healthcare; theoretical bases of obtaining, collecting, entering, storing, searching, processing, converting, distributing medical data; types and classification of modern medical information systems;

Be able to:
Classify modern information systems and telemedicine technologies used in medicine and healthcare; use modern information and telemedicine systems for processing medical and biological information; navigate the features of organizing telemedicine events; distinguish the main types of information and telecommunications technologies used in healthcare; prepare medical information for conducting telemedicine consultations using modern information technologies; to use various types of modern medical information and telemedicine systems for professional activity; to assess the legality and effectiveness of the use of modern medical information and telemedicine systems in professional activity.

Own:
Skills of using telemedicine and medical information systems in the implementation of professional tasks such as preparing and conducting teleconsultations, conducting remote diagnostics.

4. The volume of disciplines and types of education work
Total laboriousness of discipline is__2__ learning credits.

Type of academic work		Total	Semesters			
			12			
Classes (total)		34	34			
Including:			-	-	-	-
Lectures		-	-	-	-	-
Practical classes (PC)		34	34			
Seminar *(C)*						
Laboratory *(LW)*						
Independent study		38	38			
Total	час	**72**	**72**			
	зач. ед.	**2**	**2**			

5. Discipline contents

5.1 The content of the discipline sections

1. Individual module. Introduction to Telemedicine.
1.1 Module unit. Basic term. The goals of telemedicine today.
Course contents: A history of the Telemedicine. Advancement of Telemedicine in Russia and abroad. The reasons for successes and failures of telemedicine projects. The relations between Telemedicine and Computer Science.

1.2. Module unit. The Telemedicine as a new form of healthcare organization.
Course contents. The main method of work in Telemedicine (a consultation, a consilium, a lecture, a seminar, a master class, scientific and practical conference, a patronage, a monitoring). Organizational structures of telemedicine systems.

2. Individual module. A technological equipment of telemedicine activities.
2.1. Module unit. Practical experience of leading telemedicine centers.
Course contents. Internet portal as an environment for organizing telemedicine events. A technological equipment of mobile telemedicine. Videoconferencing as a technological basis for telemedicine.

2.2. Module unit. An encoding and decoding information standards. An image and sound quality.
Course contents. Patients graphic information storage and transmission standards. Principles of PACS construction. Areas of application and technological equipment of the telepathology.

3. Individual module. Scenarios of Telemedicine activities.
3.1 Module unit. Ethical and deontological aspects of telemedicine.
Course contents. Legal and economic relations of subjects in telemedicine. Economics and marketing of telemedicine today. Problems of Russian telemedicine and ways to solve them. Protection of personal data during telemedicine activities.

3.2 Module unit. Hardware and software of Telemedicine.
Course contents. The level of confidence in the information sent and responsibilities of the parties. Electronic signature, "telemedicine manager". Features of remote access to IIA during remote consultations. Copyright protection for remote interactive studying. Nowaday's developments of leading manufacturers for telemedicine.

5.2. Sections of discipline and type of classes

No.	Title of discipline	Lecture	Practical classes and Laboratory			IS	Total hours
			PC/S	L	In an IF		
1.	Introduction to Telemedicine		11			12	23
2.	A technological equipment of telemedicine activities		12			13	25
3.	Scenarios of Telemedicine activities		11			13	24
4.	Total		34			38	72

6. Laboratory practice (if available) is not provided for in the plan

7. Practical classes (seminars)

No	Title of discipline	Subjects of practical classes (seminars)	Time-consuming (hours)
1	**INTRODUCTION TO TELEMEDICINE**	BASIC TERM. THE GOALS OF TELEMEDICINE TODAY	6
		THE TELEMEDICINE AS A NEW FORM OF HEALTHCARE ORGANIZATION	5
2	**A TECHNOLOGICAL EQUIPMENT OF**	PRACTICAL EXPERIENCE OF LEADING TELEMEDICINE CENTERS.	6
		AN ENCODING AND DECODING INFORMATION STANDARDS	6

	TELEMEDICINE ACTIVITIES.		
3	**SCENARIOS OF TELEMEDICINE ACTIVITIES**	ETHICAL AND DEONTOLOGICAL ASPECTS OF TELEMEDICINE	5
		HARDWARE AND SOFTWARE OF TELEMEDICINE	6

8. Material and technical component of the discipline:

To conduct the discipline in the 434 auditorium of the FGSN zone A there is everything necessary for conducting classes:
- Asus K756UJ 90NB0A21-M00890 laptop – 1 pc.
- Eaton 9130RM 1500BA uninterruptible power supply-1 pc.
- ASUS VX279H Black LCD monitor 3 pcs.
- professional A3 format scanner for graphics Microtek ScanMaker 9800XL-1 pc.
- Document camera on the platform with a built-in AVerVision PL50 light tablet - 1 pc.
- Wireless Network Full HD Camera with Night Shooting Support D-Link DCS-2230-1 pc.
- ASUS RT-N66U 802.11 n router - 1 pc.
- Apple iPad Air 2 tablet - 1 pc.
- NEC MultiSync E425 LCD Panel+Wall Mount for Kromax TV-1 pc.
- Acoustic system as a part (acoustic system of ceiling mounting LS 6 CT-5-1 pc.
- Video conferencing complex. communications Collaborate Pro 900-1 pc

9. Information support of the discipline:
To master the discipline, a Telemedicine class is used, and classes are also held in existing telemedicine centers in Moscow.
a) Software: Windows 10.0 Operating System, Office 365, IOS operating system for Apple iPad Air 2 tablet, Collaborate software
b) resources of the information and telecommunications network "Internet":
1. EBS of RUDN and third-party EBS, to which university students have access on the basis of concluded contracts:
- Electronic library system of the RUDN-EBS RUDN http://lib.rudn.ru/MegaPro/Web
- EBS "University Library Online" http://www.biblioclub.ru
-EBS "Student Consultant" www.studentlibrary.ru
-EBS "Doe" http://e.lanbook.com/
- Telecommunications educational and information system http://esystem.rudn.ru/
2. Databases and search engines:
search engine Yandex https://www.yandex.ru/
- Google search engine https://www.google.ru/
- bibliographic database SCOPUS http://www.elsevierscience.ru/products/scopus/
- documentation center of the World Health Organization http://whodc.mednet.ru/

10. The list of main and other educational literature

a) main literature
- Столяр В.Л. Амчеславская Учебное пособие «Телемедицина: задачи, технологии, перспективы» Москва РУДН 2020
- Столяр В.Л. Амчеславская Учебное пособие «Курс лекций по основам телемедицины» Москва 96 с РУДН 2017

- Амчеславская М.А. Столяр В.Л Учебно-методическое пособие «Методические рекомендации проведения видеоконсилиума» Москва 7 с РУДН 2017

б) other literature

- V.Stolyar, M.Amcheslavskaya, V.Fedorov Remote interactive training for doctors based on video conference solutions: 20-years experience Proc. 9 IEEE International conference on Ubi-Media Computing Moscow, p.360-362, ISBN 978-5-88835-045-4. 2016
- Амчеславская М.А. Столяр В.Л Арктическая телемедицина Материалы II Международной научно-практической конференции «Дистанционное обучение врачей на базе видеоконференцсвязи» стр. 6-11 г. Нарьян-Мар, Ненецкий автономный округ, Российская Федерация 2016 г.
- Столяр В.Л. Телемедицинская сеть в системе здравоохранения ОАО «РЖД». Медицинская наука и практика. № 1, 2008. С. 56.
- Фёдоров В.Ф., Столяр В.Л. Проблемы российской телемедицины и пути их решения (краткая экспертная оценка). Врач и информационные технологии», №5 2008. С. 43-51.
- Сельков А.И., Столяр В.Л., Атьков О.Ю., Селькова Е.А., Чуева Н.В. Опыт создания телеконсультационной сети в удаленных регионах России и концепция развития центров е-диагностики в лечебных учреждениях малых городов и сел. - В кн.: International conference Fundamental Space Research Recent development in Geoecology Monitoring of the Black Sea Area and their Prospects. Conference Proceedings/ Editor Malina Jordanova. Sunny Beach, Bulgaria, September 22-27, 2008. ISBN 978-954-322-316-9. p.p. 316 – 319.

11. Methodological guidelines for students on the development of the discipline (module)
Practical classes on the course "Telemedicine" are taught by teachers of the Department of Medical Informatics and Telemedicine. The course consists of 34 hours of practical classes for students of the specialty "General Medicine".
Independent work of students during extracurricular hours can take place in the classrooms of the department and at home.
Extracurricular independent work of the student includes:
1. The study of the material according to the textbook, textbooks.
2. Preparation of the project for holding a video conference.
3. Work in an information and educational environment with available databases.

12. Fund of evaluation funds for conducting intermediate certification of students in the discipline (module)
Materials for assessing the level of mastering the discipline "Telemedicine" (evaluation materials), including standard tasks; control works; tests and methods of control(credit), a list of competencies indicating the stages of their formation, a description of indicators and criteria for evaluating competencies at various stages of their formation, a description of assessment scales, standard control tasks or other materials necessary for evaluating knowledge, skills, skills and experience of activity that characterize the stages of competence formation in the process of mastering the educational program, methodological materials that define the procedures for evaluating knowledge, skills, skills and experience of activity that characterize the stages of competence formation, developed in full and available to students on the discipline page in TUIS RUDN.
Test tasks and control works are grouped according to the main sections of the course and are used in the classroom, as well as as an integral part of the intermediate and final control of students ' knowledge during control works, colloquiums, tests.

The program is compiled in accordance with the requirements of the FSES HE.

Assistant
Department of Medical Informatics and Telemedicine   M. Amcheslavskaya

Professor
Department of Medical Informatics and Telemedicine   V. Fedorov

Head of the Department
Department of Medical Informatics and Telemedicine   V. Stolyar

Head of the Program   **I. Radysh**