

Документ подписан простой электронной подписью
Информация о владельце:
ФИО: Поверинов Игорь Егорович
Должность: Проректор по учебной работе
Дата подписания: 13.07.2023 22:12:04
Уникальный программный ключ:
6d465b936eef331cede482bde6d12ab982166521018463d55b72a2eab00e1b2

MINISTRY OF EDUCATION AND SCIENCE OF RUSSIA

**Federal State Budgetary Educational Institution
of higher education**

**«I.N. Ulianov Chuvash State University»
(FSBEI of HE «I.N. Ulianov Chuvash State University»)**

Medical Faculty

Department of Applied Physics and Nanotechnology

«APPROVE»

Vice-rector for Academic Affairs

 I.E. Poverinov

« 13 » 04 2022

**Working programs of the discipline (module)
«Медицинская информатика и искусственный интеллект
в медицине / Medical Informatics and Artificial Intelligence
in Medicine»**

Direction of training / specialty 31.05.03 Стоматология / Dentistry
Graduate's qualification Врач-стоматолог / Dental Practitioner

Direction (profile) / specialization «Dentistry»

Form of training – очная / intramural

Course – 2

Term – 4

Total academic hours/credit points – 72/2

The year of beginning the training – 2022

The fundamental document for compiling the working program of the discipline (module)
Федеральный государственный образовательный стандарт высшего образования -
специалитет по специальности 31.05.03 Стоматология (приказ Минобрнауки России от
12.08.2020 г. № 984)

Approved by:

Head of the department, Doctor of Physical and Mathematical Sciences V. S. Abrukov

The working program was approved at the meeting of the Department of Applied Physics
and Nanotechnology,

25.03.2022, protocol № 6

Head of the department V.S. Abrukov

Approved by

Dean of the Medical Faculty V.N. Diomidova

Acting Head of the Educational and Methodological Department E.A. Shirmanova

1. The purpose and objectives of training in the discipline (module)

The purpose of the discipline - Изучение студентами основ современных представлений о медицинской информатике, искусственном интеллекте в медицине, науке о данных и интеллектуальном анализе и моделирование данных, перспектив их применения при решении задач фундаментальных и прикладных исследований в медицине и других областях знаний. / Students study the basics of modern ideas about medical informatics, artificial intelligence in medicine, data science and data mining and data modeling, the prospects for their application in solving problems of fundamental and applied research in medicine and other fields of knowledge.

The objectives of the discipline - - formation of ideas about medical informatics, artificial intelligence in medicine, data science and the basics of data mining and modeling in medicine and other fields of knowledge.

- formation of the ability to apply the methods of data science and data mining and modeling in solving problems of fundamental and applied research in medicine and other fields of knowledge.

- study, compilation and analysis of models for solving problems of fundamental and applied research in medicine and other fields of knowledge, their meaningful interpretation;

- mastering the techniques and methods of medical informatics, artificial intelligence, data science and data mining and modeling.

2. The place of practical training in the structure of the educational program of higher education

The discipline «Медицинская информатика и искусственный интеллект в медицине / Medical Informatics and Artificial Intelligence in Medicine» относится к обязательной части учебного плана refers to the mandatory part in the curriculum of the educational program of higher education (hereinafter referred to as the EP of HE) in the field of training / specialty 31.05.03 Стоматология, direction (profile) / specialization of the program «Dentistry».

Previous academic disciplines (modules) and (or) practices that form the knowledge, skills and abilities necessary for training in the discipline (module):

История медицины / History of Medicine

Медицинская физика / Medical Physics

Безопасность жизнедеятельности / Health and Safety

3. Planned learning outcomes in the discipline (module), correlated with the planned learning outcomes

Planned learning outcomes in the discipline (module), correlated with the planned learning outcomes

Code and name of the competence	Code and name of the competence achievement	Descriptors for the indicator of competence achievement (learning)
ОПК-13 Способен понимать принципы работы современных информационных технологий и использовать их для решения задач профессиональной деятельности / He/she is	ОПК-13.1 Способен понимать современные информационные технологии в профессиональной деятельности / He/she is able to understand modern information technologies in professional activity	

able to understand the principles of modern information technologies and use them to solve the problems of professional activity		
ОПК-13 Способен понимать принципы работы современных информационных технологий и использовать их для решения задач профессиональной деятельности / He/she is able to understand the principles of modern information technologies and use them to solve the problems of professional activity	ОПК-13.2 Способен использовать современные информационные технологии в профессиональной деятельности / He/she is able to use modern information technologies in professional activities	
ОПК-13 Способен понимать принципы работы современных информационных технологий и использовать их для решения задач профессиональной деятельности / He/she is able to understand the principles of modern information technologies and use them to solve the problems of professional activity	ОПК-13.3 Способен решать задачи профессиональной деятельности с использованием современных информационных технологий / He/she is able to solve the problems of professional activity using modern information technologies	

4. Structure, scope and content of the discipline (module)

Educational activities in the discipline (module) are carried out:

- in the form of students' face-to-face work with the teaching staff of the organization and (or) persons involved by the organization to implement the educational programs on other terms (hereinafter - contact work);

- in the form of students' independent work.

Face-to-face work can be classroom-based, extramural, as well as it can be conducted in an electronic information and educational environment (EIEE).

Learning sessions in the discipline (module) and interim assessment of students are conducted in the form of face-to-face work and in the form of students' independent work.

During learning sessions in the discipline (module) face-to-face work includes: lecture-type classes, seminar-type classes and (or) group consultations, and (or) individual work of students with the teaching staff of the organization and (or) persons involved by the organization to implement the educational programs on other terms (including individual consultations).

Legend:

Lec – lectures, Lab – laboratory work, Pr – practical classes, ICW – individual face-to-face work, IW – independent work.

4.1. Content of the discipline (module)

Section name	The section's content	Formed competences	Competence achievement indicator
--------------	-----------------------	--------------------	----------------------------------

4.2. Scope of the discipline and types of academic work

Forms of control and types of academic work	Labor intensity of the discipline (module)		
	4	total	
1. Face-to-face work:	48,2	48,2	
In-class learning in total, including:	48	48	
Лекционные занятия (Лек)	16		
Лабораторные занятия (Лаб)	32		
Индивидуальная контактная работа (ИКР)	0,2		
2. Independent work of the student:	23,8	23,8	
3. Intermediate certification (exam) (зачет)	3а	3а	
Total:	academic hours	72	72
	credit units	2	2

№ item	The section's (theme's) name	Face-to face work, including in the electronic information and educational environment, academic hours				IW, academic hours	Total, academic hours
		Lect.	Pr.	Lab.	ICW		
Total academic hours							

4.3. Summary of the discipline (module), structured by sections (topics)

5. Educational technologies

To implement the competence-based approach in the study of the discipline (module), extensive use of active and interactive methods of conducting classes in the educational process is provided:

6. Forms of control and types of evaluation materials for the discipline (module)

Intermediate attestation - evaluation of intermediate and final results of training in the discipline (module).

6.1. Sample list of questions for the credit test

6.2. Sample list of questions for the examination

6.3. Suggested themes of term papers (projects)

6.4. Suggested themes of term projects

6.5. Suggested topics of calculation and graphic works

7. Educational, methodological, informational and software support of the discipline (module)

The electronic catalog and electronic information resources provided by the scientific library of the FSBEI of HE "I. N. Ulianov Chuvash State University" are available at the link <http://library.chuvsu.ru/>

7.1. Regulatory documents, standards and rules

7.2. Recommended basic educational and methodological literature

№ item	Name
1	

7.3. Recommended supplementary educational and methodological literature

№ item	Name
1	

7.4. List of resources of the "Internet" information and telecommunication network

№ item	Name	Link to the resource
1		

7.5. Software, professional databases, information and reference systems, electronic educational resources and electronic library systems

Software, professional databases, information and reference systems provided by the Informatization Department of the FSBEI of HE "I.N. Ulianov Chuvash State University" are available for download at the link <http://ui.chuvsu.ru/> /. The Unified Register of Russian programs for electronic computers and databases, including freely distributed ones, is available at the link [reestr.minsvyaz.ru/reestr /](http://reestr.minsvyaz.ru/reestr/).

7.5.1. Licensed and freely distributed software

Microsoft Windows operating System and/or Unix-like operating system and/or mobile operating system;

Office software packages:

Microsoft Office and/or LibreOffice

and (or) OpenOffice and (or) analogues;

Browsers, including Yandex.Browser.

List of software:

7.5.2. Lists of professional databases and (or) information reference systems and (or) electronic library systems and (or) electronic educational resources

8. Material and technical support of the discipline

Classrooms for lecture-type classes in the discipline are equipped with a teacher's automated workplace consisting of: a personal computer/laptop, multimedia equipment with a screen and (or) SMART interactive whiteboard/SMART TV.

The premises for students' independent work are equipped with computer equipment enabling to connect to the Internet and provide access to the electronic information and educational environment of the FSBEI of HE "I.N. Ulianov Chuvash State University".

№ item	Lesson type	Brief description and characteristics of the composition of installations, measuring and diagnostic equipment, computer equipment and experimental automation tools
1		

9. Means of adapting the discipline teaching to the needs of persons with physical conditions

If necessary, persons with physical conditions can be offered one of the following options for perceiving information, taking into account their individual psychophysical characteristics:

- 1) using e-learning and distance learning technologies.
- 2) using special equipment (enginery) and software in accordance with the students' health restrictions in the Training Centers for Persons with Disabilities and Physical Conditions (hereinafter referred to as special needs) available at the university.

In the course of training, if necessary, the following conditions are provided for persons with visual, hearing and musculoskeletal disorders:

- for persons with visual impairments: educational and methodological materials in printed form in enlarged font; in the form of an electronic document; in the form of an audio file (conversion of educational materials into audio format); in printed form in Braille; individual consultations involving a tactile interpreter; individual assignments and consultations.

- for people with hearing impairments: educational and methodological materials in printed form; in the form of an electronic document; video materials with subtitles; individual consultations involving a sign language interpreter; individual assignments and consultations.

- for persons with disorders of the musculoskeletal system: educational and methodological materials in printed form; in the form of an electronic document; in the form of an audio file; individual assignments and consultations.

10. Guidelines for students to perform independent work

The purpose of the student's independent work (IW) is to consolidate the theoretical knowledge gained and to acquire practical skills in using and performing research of algorithms and data structures when designing application software programs. IW includes independent study of educational issues, preparation for laboratory classes, performing calculation and graphic work, preparation for a test and an exam.

The list of questions and tasks for independent work to prepare for laboratory classes is given in the corresponding methodological instructive regulations in the description of each laboratory work.

The list of questions and tasks for independent work to carry out calculation and graphic work is given in the relevant methodological instructive regulations.

11. Methodological instructive regulations for students studying the discipline (module)

11.1. Methodological instructive regulations for preparing for seminar-type classes

11.2. Methodological instructive regulations for preparing for an examination

11.3. Methodological instructive regulations for preparing for a test

11.4. Methodological instructive regulations for performing computational and graphical

11.5. Methodological instructive regulations for performing a control work

11.6. Methodological instructive regulations for performing a course work (project)

List of additions and changes

The name and details (if any) of the document attached to the Working Program of the discipline (module) containing the text of updates	Department's decision		Full name of department head:
	Date	Protocol №	