

**ANNOTATION****work program of the discipline****"Medical informatics"**

Speciality	05/31/01 General medicine
Number of credits	In accordance with the RUP
Interim certification form (pass/pass with assessment/exam)	test

**1. The purpose of studying the discipline**

Provide information about modern information technologies used in medicine and healthcare; study the principles of storage, retrieval, processing and effective use of biomedical information, data and knowledge to solve problems and make decisions using computer technology.

**2. Summary of the discipline****1. Concept of information. General characteristics of the processes of collecting, transmitting, processing and storing information. Methods and means of informatization in medicine and healthcare**

Information and information process. Types of information. Computer science as an independent science. Subject and tasks of medical informatics. The main stages of development of domestic medical informatics. Features of medical information. Classes and types of medical information systems.

**2. Telecommunication technologies and Internet resources in medicine**

Telemedicine concept. Regulatory and legal framework for the development of telemedicine in the Russian Federation. Distance learning. Application of telecommunication technologies in clinical practice. Internet resources for searching professional information.

**3. Basic information conversion technologies**

Possibilities of standard software for solving problems of practical medicine.

**4. Modeling of physiological, morphological, molecular genetic and biochemical processes**

Principles of creating mathematical models of physiological and other processes occurring in the human body for their subsequent use as part of automated medical decision support systems. Types of models in medicine

**5. Information systems of medical institutions**

Methodology for constructing a medical information system for healthcare facilities. Levels of informatization of healthcare facilities. Goals, objectives, structure, main functions and principles for the development of automated information systems for healthcare facilities. The role of automation of individual services and departments of health care facilities. Goals, objectives, structure, main functions and principles of development of automated information systems for municipal, territorial,

federal levels of health care. Main sources of information. Groups of analyzed indicators. Methods of presenting and processing data. Organizational and legal support of medical information systems (MIS). Basic standards for the exchange of medical information. MIS integration capabilities. Basic concepts and definitions in the field of information security and information protection.

#### **6. Information support for the diagnostic and treatment process**

Information model of the diagnostic and treatment process. Elements of medical practice as an object of informatization. Formalization and structuring of medical information. Basic requirements for the preparation of formalized medical documents. Features of decision making in medicine. Information analysis algorithms - statistical and knowledge-based. Capabilities of expert systems.

#### **7. Automated medical and technological systems for clinical laboratory, scientific research and functional diagnostics.**

Organization of technological process in a medical laboratory. Relevance of automation of laboratory activities. Structure and functions of laboratory information systems. Genetic diagnostic and analysis systems. Medical instrument and computer systems for functional studies of physiological systems of the body. Computer processing and analysis of signals and images. Information support for the interpretation of the results obtained.