

## **ELECTROMAGNETIC BIOSIGNALS AND ELECTROMAGNETIC RADIATION IN ELECTRONIC EDUCATION OF MEDICAL BIOPHYSICS**

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### **D2.4 PROJECTS FOR SUPPORT OF ELECTRONIC EDUCATION IN MEDICAL AND HEALTH CARE FIELDS**

Without physical background, it is not possible to understand correctly many functions of the human organism, neither diagnostic methods in medicine based on physical principles, nor functioning of devices, what may lead to decreased diagnostic efficiency and as well as to patient impairment. If the doctors and the medical personnel intend to approach their work responsibly, they have to understand these problems not to consider them as an enemy. We try to contribute to this problem solution within the frame of the project KEGA in cooperation with FM-Phi CU in Bratislava and MF UPJŠ in Košice. The aim of this project is to prepare multimedia materials enabling deeper understanding of topics, which cannot be explained in detail during current lessons because of lack of time. Individual topics in form of interactive lessons are planned to be completed with didactic tests and automatic evaluation. In the first stage, we cover the physical basis of bioelectromagnetism, transport processes, thermodynamics of living systems, biophysics of excitation processes, biological signals as the basis of diagnostic methods in medicine, essentials of biomedical electronics, passive electric and magnetic properties of cells, tissues and organs, electromagnetic spectrum, its basic characteristics and corresponding spectroscopic and tomographic methods, influence of non-ionising electromagnetic radiation on organism, safety and protection of health during registration of electric and magnetic biosignals. All materials are prepared in both Slovak and English language to ensure the uniform content of education in both languages. The chosen topics belong to the most difficult for understanding. They combine physical knowledge with essentials of biology, chemistry, and electronics, and represent an important background for next disciplines, as well as all diagnostic methods, which cannot be applied without modern technology. Supported by project KEGA 004UK-4/2011, MŠVVaŠ SR.