



METADATA

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Abstract

The textbook covers the subject of in-vivo diagnostic devices, instruments, and systems used in the derivation and processing of bioelectric signals. The study of the various technological systems includes the presentation of the biological principles underlying the production of the bioelectric signal, the presentation and analysis of the physical principles underlying the operation of the detection system and, most importantly, the study of the technological applications of these principles, which ultimately result in a typical integrated system for recording electrical biosignals. It is aimed at undergraduate and postgraduate students studying Biomedical Technology, from the perspective of technological specialization, while also providing the necessary knowledge of the physiology of the human body systems that produce

bioelectric signals, in order to understand the functional technical requirements of in-vivo diagnostic devices. The chapters covered in the textbook are ionic current phenomena in cells, biosignal electrodes, issues of bioamplifiers with an emphasis on the requirements of medical electronics, and the analysis of typical devices and systems for electrocardiography, electroencephalography, electromyography, and electrooculography. Particular emphasis is placed on innovative non-invasive techniques for recording electrical biosignals, through which it is possible to produce images of the electrical functioning of body tissues. The theoretical physical and mathematical background of the techniques is analyzed and applications in modern systems for tomographic imaging of brain electrical activity are presented.

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