

UNIVERSITY OF BELGRADE
FACULTY OF MEDICINE
PhD STUDIES

NAME OF THE MODULE: BIOPHYSICAL RESEARCH IN MEDICINE

CONTENT OF THE MODULE:

The application of physics in medicine in recent decades has led to the development of new diagnostic methods and medical invasive and non-invasive procedures, therapeutic procedures, as well as new experimental approaches to science and biomedical research. In addition to the knowledge and skills of doctors, these methods and procedures also require a medical physicist in the team. In particular, research dealing with cardiovascular physics, network physiology, nuclear magnetic resonance, radiation physics, biomechanics, and the use of lasers in medicine, as well as the development of sensors and optical diagnostic devices has progressed. The goal of the Doctoral studies module entitled Biophysical research in medicine is to educate physicists and doctors who work in medical institutes, clinics, hospitals, and faculties and are engaged in research in the field of biophysics related to the application of physics in medicine in diagnostics and therapy.

ENROLLMENT REQUIREMENTS:

Special:

Completed integrated academic studies in medical sciences lasting 6 years (360 ECTS);
Completed academic studies in physics with at least 300 ECTS achieved at previous study levels;
Completed academic studies of biological or medical orientation with at least 300 ECTS achieved at previous study levels;

General:

Average grade from the previous level of study that is at least 8.00 (eight),
Knowledge of the English language up to the level of communication and scientific literature,
Appropriate computer skills and desirable recommendations related to engaging in scientific research, i.e. evaluating the results of scientific research candidate's work.

ADVISORY BOARD

Prof. Dr. Dejan Žikić
Prof. Dr. Nebojsa Milošević
Prof. Dr. Mirjana Platiša
Prof. Dr. Zorica Nestorović
Prof. Dr. Sanja Mazić
Prof. Dr. Dragan Hrnčić

LIST OF OBLIGATORY SUBJECTS:

Methodology of scientific research work
Biostatistics (basic course)
Research ethics
Applied research in the field of medical physiology and biophysics
Biofluid dynamics and systemic biophysics
Biothermodynamics and biomechanics
Essays and presentations of individual candidate work, publication

LIST OF ELECTIVE SUBJECTS:

Biophysics of transport through the cell membrane
Neurobiophysics
Applied electrophysiology
NMR in medicine
Biosignals analysis
Optical devices in medicine
Image processing techniques in medicine
Physics of the cardiovascular system and hemodynamics
Biophysical techniques in experimental oncology
Biophysical techniques in occupational medicine
Radiobiology and protection against ionizing radiation