

<b>Level:</b> bachelor				
<b>Course title:</b> Physical Fundamentals of the Medical Instrumentations				
<b>Status:</b> obligatory				
<b>ECTS:</b> 6				
<b>Requirements:</b> none				
<b>Learning objectives</b> To enable students to understand the fundamental principles of biomedical measurements and biomedical instrumentation.				
<b>Learning outcomes</b> Students should understand the application of measurements and instrumentation in medicine; Students should possess the ability for interdisciplinary teamwork in the field of understanding and resolving problems related to application of biomedical instrumentation in medicine; ability to search relevant literature; ability to present research results.  The specific competences include comprehensive knowledge and understanding of physics and instrumentation application in the field of electromyography, electrocardiography, electroencephalography, ultrasound measurements and other diagnostic methods, which include application of medical instrumentation.				
<b>Syllabus</b> <i>Theoretical instruction</i> Topics include analogue electronics in biomedical instrumentation; analogue electronics in biomedical instrumentation; calibration and autocalibration; sensors and transducers; A/D and D/A conversion; computers in biomedical instrumentation; noise and hum interference and its rejection; measurement data and signal processing; dynamics of measurements; quantization error and dither; special measurements: ECG, EEG, haematology measurements; ultrasound measurements and diagnostic; magnetic resonance.  <i>Practical instruction</i>				
<b>Weekly teaching load</b>				Other:
Lectures: 2	Exercises: 2	Other forms of teaching:	Student research:	