Course Unit Descriptor

Study Programme: Biomedical engineering

Course Unit Title: Control Systems

Course Unit Code: BMI125

Name of Lecturer(s): Stanišić Darko

Type and Level of Studies: Bachelor

Course Status (compulsory/elective): compulsory

Semester (winter/ summer): summer

Language of instruction: english

Mode of course unit delivery (face-to-face/distance learning): face-to-face

Number of ECTS Allocated: 6

Prerequisites: none

Course Aims:.

Students gain basic theoretical and practical knowledge in control theory with emphasis on biological system control.

Learning Outcomes:
Acquired basic knowledge of system control. Ability to apply acquired knowledge to the analysis of biological systems.The acquired knowledge can be used in solving practical engineering problems and forms a basis for future engineering subjects.

Syllabus.
Basic notions and principles of automatic control systems. Mathematical description of continual linear and non linear systems. Laplace transform. Block diagram models. Signal flow graph models. Controllers. Analysis of system stability using analytical methods. Control performance evaluation in stationary and transition regime. Root locus. Analysis and syntheses of system in frequency domain. Nyquist stability criteria, Bode method. Concept of the state of a system and state variable models. Choice and adjusting of parameters of industrial controllers. PID controllers.

Required Reading:

Weekly Contact Hours: 2	**Lectures: 3**	**Practical work: 2**

Teaching Methods:
Lectures, calculation. Consultations.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Attendance			
Computer exercises			
Tests (4x)			