

Course title:	Process Control and Industrial Measurements
Institute/Division:	FACULTY OF CHEMICAL ENGINEERING AND TECHNOLOGY
Number of contact hours:	30 hours (15 h lectures and 15 h exercises)
Course duration:	1 semester (6 th semester of regular I cycle studies - spring)
ETCS credits:	2
Course description:	Lectures and exercises content: Characteristics of automatic control. Properties and advantages of automatic control in chemical industry. / Dynamics of objects in chemical engineering and technology in the domain of time. Criteria for the stability of objects with lumped-state variables. Time and phase trajectories. / Dynamics of linear objects in the domain of complex numbers. Laplace transform. Transfer function for single objects and complex systems. / Frequency characteristics: Nyquist's, Bode's and Nichols'. Graphical representation of frequency characteristics. / Classification of automatic control systems. Structures of automatic control systems. Types and dynamics of continuous and discrete controllers. Criteria of the quality of automatic control systems. / Methods for the evaluation of stability of closed-loop and open-loop systems..
Education effects :	
- <u>knowledge</u> :	Student knows basic numerical methods used in engineering calculations
- <u>skills</u> :	Student can use mathematical knowledge to solve practical problems from the field of chemical engineering, chemistry and technique; student can choose a calculation tool that is adequate to the problem to be solved
- <u>social</u> :	student is able to work independently and in the group
Literature:	[1] Luyben, W. L., Process modeling, simulation and control for chemical engineers. McGraw-Hill Higher Education, 1989. [2] Rowland, J.R., Linear control systems, J.Wiley & Sons, 1986.
Assessment method:	Final test
Prerequisites:	Completed courses: Mathematics, Physics, Chemical Engineering.
Primary target group:	Students from all specialties
Lecturer:	dr inż. S. Skoneczny
Contact person:	dr inż. S. Skoneczny; e-mail: skoneczny@chemia.pk.edu.pl
Remarks:	Regular course