

Course title:	Process Control and Industrial Measurements – optional course
Institute/Division:	FACULTY OF CHEMICAL ENGINEERING AND TECHNOLOGY / Department of Chemical and Process Engineering
Erasmus subject code:	
Number of contact hours:	30 hours (15h Lecture + 15h exercises)
Course duration:	1 semester (fall or 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.
Literature:	[1] Luyben, W. L., <i>Process modeling, simulation and control for chemical engineers</i> . McGraw-Hill Higher Education, 1989. [2] Rowland, J.R., <i>Linear control systems</i> , J.Wiley & Sons, 1986.
Assessment method:	Final test
Prerequisites:	Completed courses: Mathematics, Physics, Chemical Engineering
Primary target group:	Students in Chemical Engineering or Chemical Technology
Lecturer:	S. Skoneczny, PhD Eng.
Contact person:	S. Skoneczny, PhD Eng., e-mail: skoneczny@chemia.pk.edu.pl
Deadline for application:	15th January (spring) or 30th August (fall)
Remarks:	The course will start for at least 3-5 foreign students