STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Control theory		**1010332211010331168**
Field of study	Profile of study (general academic, practical)	Year /Semester
Automatic Control and Robotics	**general academic**	**1 / 1**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**Polish**	**obligatory**
Cycle of study:	Form of study (full-time,part-time)	
Second-cycle studies	**full-time**	
No. of hours		No. of credits
Lecture: **45** Classes: **-** Laboratory: **-** Project/seminars: **15**		**5**
Status of the course in the study program (Basic, major, other)	(university-wide, from another field)	
other	**university-wide**	
Education areas and fields of science and art		ECTS distribution (number and %)
technical sciences		**5 100%**
Technical sciences		**5 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Knowledge of algebra, basics of probability theory and control theory for continuous systems.
2	**Skills**	Is able to use mathematical apparatus of algebra and set theory.
3	**Social competencies**	Readiness to work in groups and ability to solve problems currently unknown to the student.

Assumptions and objectives of the course:

Improvement of theoretical and practical skills related to modelling of discrete event systems and hybrid systems (with discrete and continuous dynamics).

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Has organized and extended knowledge on design and analysis of control systems. - [K_W02]

Skills:

1. Is able to determine models of compound systems and processes and to use them to analyse and design automation and robotics systems. - [K_U04]

Social competencies:

1. Is able to think and act in creative and entrepreneurial manner. - [K_K05]

Assessment methods of study outcomes

Written examination, tests written/oral, projects.

Course description

Lectures: Introduction to discrete event systems, languages and automata; operations on automata; finite state automata; analysis of discrete event systems; supervisory control

timed and hybrid models; stochastic automata with time; Markov chains; Petri Nets -- analysis and applications.

Projects: preparation to simulation of discrete event systems, design of a model of a selected device, analysis and software verification of the designed models.

Basic bibliography:

1. Cassandras C. G., Lafortune S.: Introduction to Discrete Event Systems Second Edition, Springer US 2008

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Lectures	45
2. Projects	15
3. Tutorials	9
4. Preparation to the projects	46

Student's workload

Source of workload	hours	ECTS
Total workload	115	5
Contact hours	69	3
Practical activities	46	2