STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Computer Control Systems**		Code **1010334271010331400**
Field of study **Automatic Control and Robotics**	Profile of study (general academic, practical) **(brak)**	Year /Semester **4 / 7**
Elective path/specialty **Computer Control Systems**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **part-time**	

No. of hours				No. of credits
Lecture: **22** Classes: **-** Laboratory: **20** Project/seminars: **-**				**5**

Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**

Education areas and fields of science and art	ECTS distribution (number and %**)**

Responsible for subject / lecturer:

Dr inż. Jarosław Warczyński
email: jaroslaw.warczynski@put.poznan.pl
tel. 61 665 2374
Wydział Elektryczny
 ul. Piotrowo 3A, 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	K1_W13 K1_W10
2	**Skills**	K_U03: K_U01:
3	**Social competencies**	K1_K04:

Assumptions and objectives of the course:

The goal of the subject is an introduction to computer technologies establishing the real strength of computer control systems - mainly technologies of integration which allow to build big, cooperative systems with the ability of exchanging information, dedicated to coordinated control of huge systems.

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

Knowledge:

1. K_W02 - [K_W02]

Skills:

1. K_U06 - [K_U06]

Social competencies:

1. K_K02 - [K_K02]

Assessment methods of study outcomes

Written exam (checking of theoretical knowledge)

Project: Assessment of students? projects from the framework of computer control system integration.

Course description

Lecture: Justification of computer control systems demand ? hierarchical and distributed systems, for example MES (Manufacturing Execution Systems), necessity of linking control and management systems. Integration of control subsystems as a specific feature of computer control systems. Technologies of integration: DDE (Dynamic Data Exchange) technology, COM (Component Object Model) and DCOM (Distributed COM), RPC (Remote Procedure Call), XML services of WEB, OPC (OLE for Process Control) standard, OPC UA (Unified Architecture). Introduction to projects from the framework of DDE, OPC and WWW applications for data exchange between PLC and user application.

Laboratory: Project tasks consist in setting servers of DDE, OPC and WWW and establishing data exchange between PLC and SCADA self-constructed SCADA application.

Basic bibliography:

1. Lange, J., Iwanitz, F.: OPC. Fundamentals, Implementation and Application. Huethig, Hedelberg, 2006.

2. Fryźlewicz, Z., Salamon, A.: Podstawy architektury i technologii usług XML sieci WEB. PWN, 2008.

3. Tanenbaum, A. S., M. van Steen: Systemy rozproszone, Zasady i paradygmaty. WNT, 2006.

4. Grega, W.: Metody i algorytmy sterowania cyfrowego w układach scentralizowanych i rozproszonych. Wyd. AGH, Kraków, 2004.

Additional bibliography:

1. http://www.opcfoundation.org/

2. http://www.mesa.org/

3. 3. http://www.isa.org/

Result of average student's workload

Activity	Time (working hours)
1. Exam	15
2. Laboratory	20
3. Lecture	22
4. Preparation to laboratories	20

Student's workload

Source of workload	hours	ECTS
Total workload	77	4
Contact hours	42	0
Practical activities	20	0