COURSE DESCRIPTION CARD - SYLLABUS

Course name
System development with UML [N2AiR1-RiSA>PO3-UML]

Course

Field of study
Automatic Control and Robotics

Year/Semester
2/4

Area of study (specialization)
Autonomous Robots and Systems

Profile of study
general academic

Level of study
second-cycle

Course offered in
polish

Form of study
part-time

Requirements
elective

Number of hours

Lecture
10

Laboratory classes
20

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

3,00

Coordinators

dr inż. Tomasz Piaścik
tomasz.piascik@put.poznan.pl

Lecturers

Prerequisites

1. Student has basic knowledge of selected algorithms and data structures as well as methodology and techniques of procedural and object-oriented programming. He knows and understands the basic processes taking place in the software development cycle. [(K1_W11), (P6S_WG)] 2. Student is able to obtain information from bibliography, databases and other sources; has the ability to self-educate in order to improve and update professional competences. [K1_U01 (P6S_UU)] 3. Student Is ready to critically evaluate his or her knowledge. He understands the need for and knows the possibilities of continuous learning - improving professional, personal and social competences, he/her is able to inspire and organize the learning process of others. [K1_K01 (P6S_KK)]

Course objective

Introduction to the field of modeling information systems using UML (Unified Modeling Language). This modeling language is the most important language - notation used today in the software industry, enabling the definition of requirements for the designed system, supporting the design and construction of systems architecture and the production of their technical documentation.

Course-related learning outcomes

Knowledge
1. Graduate has elementary knowledge of system modeling in UML. [P7S_WG]
2. Graduate has the knowledge to perform the requirements analysis and the description of the architecture of a simple IT system. [P7S_WG]
3. Knows and understands selected areas of mathematics in enhanced level; has extended and deepened knowledge necessary to formulate and solve complex tasks in the field of control theory, optimization, modelling, identification and signal processing [K2_W1] [P7S_WG]
4. Has specialist knowledge of remote and distributed systems, real-time systems and network techniques [K2_W3] [P7S_WG]
5. Has a structured and in-depth knowledge of specialised microprocessor systems designed for control and measurement systems [K2_W18] [P7S_WG)]

Skills
1. Can define in UML the requirements for a simple IT system. [P7S_UW]
2. Can describe the architecture of the system using the UML language. [P7S_UW]
3. Has basic knowledge about the life cycle of automation and robotics systems and control and measurement systems; [K2_W13][P7S_UW]
4. Is able to formulate and verify (by simulation or experimentally) hypotheses related to engineering tasks and simple research problems in the field of automatic control and robotics; [K2_U15] [P7S_UW]
5. Can critically assess and select appropriate methods and tools to solve an automation and robotics task; can use innovative and unconventional automation and robotics tools [K2_U22] [P7S_UW]

Social competences
1. Is ready to critically evaluate his knowledge [K2_K1] [P7S_KK]
2. Is ready to recognize the importance of knowledge in solving cognitive and practical problems. [(P7S_KK)]
3. Is aware of the need for a professional approach to technical issues, meticulous familiarization with the documentation and environmental conditions in which the equipment and its components can operate [K2_K4] [P7S_KK]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
The final grade consists of partial grades for:
- answers to control questions during laboratory classes,
- tasks performed during laboratory classes,
- tasks commissioned to be performed outside the time of laboratory classes,
- activity during classes,
- final test of the lecture (15-20 questions).

Programme content

The lecture will cover:
- system modeling goals and methods,
- introduction to UML,
- domain modeling,
- system requirements analysis,
- system architecture design,
- application design,
- UML diagrams review.

Laboratory classes
- practical exercise of selected aspects of modeling information systems presented during the lecture
- presenting and discussing design practices
- case study analysis,
- constructing UML diagrams.

Teaching methods

Lecture:
- lecture with multimedia presentation supplemented with examples given on the board,
- interactive lecture with elements of discussion,
- theory presented in close connection with practice.
Laboratory class:
- multimedia shows (instructional videos),
- discussions of the presented content,
- demonstration of examples at the table.

Bibliography

Basic
1. Miles R., Hamilton K., UML 2.0. Wprowadzenie, Helion, 2007
2. Wrycza S.,Marcinkowski B., Wyrzykowski K., Język UML 2.0 w modelowaniu systemów informatycznych, Helion, 2005
Additional
1. Schmuller J., UML dla każdego, Helion, 2003
2. Maksimchuk R.A., Naiburg E.J., UML dla zwykłych śmiertelników, Wydawnictwo Naukowe PWN SA, 2007
3. OMG® Unified Modeling Language® (OMG UML®) Version 2.5.1, Object Management Group, December 201
4. Dąbrowski W., Stasiak A., Wolski M., Modelowanie systemów informatycznych w języku UML 2.1, Wydawnictwo Naukowe PWN SA, 2007

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	45	2,00