## STUDY MODULE DESCRIPTION FORM

| Name of the module/subject **The elements of computer science techniques** | | Code **1010331211010335032** |
|---|---|---|

| Field of study **Automatic Control and Robotics** | Profile of study (general academic, practical) **general academic** | Year /Semester **1 / 1** |
|---|---|---|

| Elective path/specialty **-** | Subject offered in: **Polish** | Course (compulsory, elective) **obligatory** |
|---|---|---|

| Cycle of study: **First-cycle studies** | Form of study (full-time,part-time) **full-time** |
|---|---|

| No. of hours Lecture: **15**  Classes: **-**  Laboratory: **-**  Project/seminars: **15** | No. of credits **3** |
|---|---|

| Status of the course in the study program (Basic, major, other) **basic** | (university-wide, from another field) **university-wide** |
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| Education areas and fields of science and art **technical sciences** **Technical sciences** | ECTS distribution (number and %**)** **3   100%** **3   100%** |
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### Responsible for subject / lecturer:

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### Prerequisites in terms of knowledge, skills and social competencies:

| 1 | **Knowledge** | Student has a basic knowledge resulting from upper |
|---|---|---|
| 2 | **Skills** | Student is able to obtain information from the literature , databases, and other sources;  has the skills of self-education in order to improve and update  professional competence . He speaks English at a level sufficient to B2 communication , as well as reading comprehension cards catalog , application notes , manuals, equipment and descriptions of tools. |
| 3 | **Social competencies** | The student understands and knows the need for continuous training opportunities - improving professional skills , personal and social ,  can inspire and organize the learning of others. |

### Assumptions and objectives of the course:

The aim of the course is to familiarize students with basic computer tools used in the later part of the learning process for the preparation and presentation of technical documentation ( LaTeX ) , documenting the program code ( doxygen ) , calculations and numerical simulation ( MATLAB ) and version management of projects and the basics of group work (SVN ) presentation capabilities and support Linux

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

### Knowledge:

1. The student has an elementary knowledge of the operation and use of tools for rapid prototyping and design , simulation and visualization systems , and automation and robotics and mechanical design of the project record . - [K_W14]

### Skills:

1. Student is able to compile the results and give a presentation on the implementation of engineering tasks .  - [K_U10]

2. The student is able to work individually and in a team; is able to estimate the time needed for the commissioned work; able to develop and implement a work schedule to ensure deadlines  - [K_U02]

### Social competencies:

1. The student has awareness of the importance and understand non-technical aspects and effects of engineering activities including its impact on the environment and the resulting responsibility for the decisions  - [K_K02]

### Assessment methods of study outcomes

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|---|
| Lecture : credit practical skills such as checking the tools discussed in the lecture |
| Project: Preparation of documents and presentations in LaTeX with the data generated from other tools ( MATLAB , doxygen ) |

### Course description

Lecture: The package MATLAB : basics of scripting language , basic functions , matrix operations , presentation of results , export and import data , the base of symbolic computation , presentation package Simulink . Doxygen : rules for the preparation of documentation programistrycznej , commenting code. SVN : version management of the project and the basics of working in a group. LaTeX : Document preparation , the creation of bibliographies , mathematical formulas , embedding graphics , tables , prepare a presentation in the package Beamer .

Project: It is practical to use the content presented in the lecture , by solving a problem and preparation of documentation and presentation of programming

Upgrade 2017: new examples

### Basic bibliography:

1. Documentation for MATLAB environment: http://www.mathworks.com

2. Documentation for LaTex package: www.ctan.org/tex-archive/info/lshort/english/

3. Documentation for doxygen: http://www.doxygen.org

4. e-learning platform https://moodle-c.cie.put.poznan.pl

### Additional bibliography:

1. P. Kaczmarek, D. Belter :podstawy programowania C i C++? - skrypt, Wydawnictwo Politechniki Poznańskiej 2011

2. Rober Love, ?Linux- programowanie systemowe? - Helion 2009

### Result of average student's workload

| Activity | Time (working hours) |
|---|---|
| 1. Lecture | 15 |
| 2. Participation in project activities | 15 |
| 3. Preparation for the exercise and performance of reports | 45 |
| 4. Consultation | 15 |

### Student's workload

| Source of workload | hours | ECTS |
|---|---|---|
| Total workload | 90 | 3 |
| Contact hours | 30 | 1 |
| Practical activities | 60 | 2 |