



Subject card

| | | | | | | | |
|---|---|--|-------------------------------------|--|--|---------|-----|
| Subject name and code | Programming of computer systems, PG_00055399 | | | | | | |
| Field of study | Mechatronics | | | | | | |
| Date of commencement of studies | October 2022 | Academic year of realisation of subject | | | 2022/2023 | | |
| Education level | first-cycle studies | Subject group | | | Obligatory subject group in the field of study Subject group related to scientific research in the field of study | | |
| Mode of study | Full-time studies | Mode of delivery | | | at the university | | |
| Year of study | 1 | Language of instruction | | | Polish | | |
| Semester of study | 2 | ECTS credits | | | 6.0 | | |
| Learning profile | general academic profile | Assessment form | | | exam | | |
| Conducting unit | Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Marek Galewski | | | | | |
| | Teachers | dr inż. Yurii Tsybrii dr hab. inż. Marek Galewski | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 0.0 | 30.0 | 0.0 | 60 |
| E-learning hours included: 0.0 | | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | Participation in consultation hours | | Self-study | | SUM |
| | Number of study hours | 60 | 16.0 | | 74.0 | | 150 |
| Subject objectives | Teaching students of structural (in C language) and object oriented programming (n Java) basics, relational databases and essentials of software engineering (software lifecycle, development methods, system modelling). | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [K6_W11] has a basic knowledge about the life cycle of mechatronic systems and objects | Student describes life cycle of IT systems and selected methods of development of such systems | | | [SW1] Assessment of factual knowledge | | |
| | [K6_W06] has organized knowledge in terms of informatic and methods of analog and digital signal processing | Student understands basic principles of structural and object oriented programming | | | [SW1] Assessment of factual knowledge | | |
| | [K6_U09] is able to formulate an algorithm, knows low and high level programming languages and appropriate IT tools for developing computer programmes to control mechatronic system | Student develops simple structural and object oriented programs in C and Java | | | [SU1] Assessment of task fulfilment | | |
| [K6_U05] is able to use properly chosen tools to compare design solutions of elements and mechatronics systems according to given application and economic criteria (e.g. power demand, speed, costs) | Student presents basic skills in modern programming tools and techniques (e.g. C, Java, NetBeans, UML, SQL) | | | [SU4] Assessment of ability to use methods and tools | | | |
| Subject contents | Programming in C language: basic elements of the C language, basic elements of program, functions, conditional statements, loops, I/O operations, array operations, strings, pointers; Programming in Java language: basic elements of the Java language, elements of object oriented programming (Classes, objectd, inheritance), I/O operations, collections, programming for GUI ; UML modelling language; Software engineering: software life-cycle, development techniques Relational databases (SQL); Introduction to Artificial Intelligence algorithms | | | | | | |

| | | | |
|--|--|--|-------------------------------|
| Prerequisites and co-requisites | Passed Computer Systems course. | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Exam | 52.0% | 60.0% |
| | Obligatory laboratory exercises | 60.0% | 20.0% |
| | Individual project | 50.0% | 20.0% |
| Recommended reading | Basic literature | [1] M. Galewski: Lecture materials published at the web site of the chair of Mechanics and Mechatronics [2] M. Galewski, P. Duba: Laboratory exercises handbooks | |
| | Supplementary literature | Kernighan B.W, Ritchie D.M, Język ANSI C. Programowanie. wyd. II, Helion, 2020 Horstmann C.S, Java. Podstawy. Helion, 2019 (ew. wcześniejsze, ale niezbyt stare wydania) Schmuller J., UML dla każdego, Helion 2003 Flasinski, M., Introduction to Artificial Intelligence, 2016 Rutkowska D., Piliński M., Rutkowski L., Sieci neuronowe, algorytmy genetyczne i systemy rozmyte, PWN, Warszawa, 1997 | |
| | eResources addresses | Adresy na platformie eNauczanie: Programowanie Systemów Komputerowych, WP, MTR, I st., sem. 02, letni 2022/23 (PG_00055399) - Moodle ID: 26535 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=26535 | |
| Example issues/ example questions/ tasks being completed | The list of sample questions for the exam (around 50) and laboratory individual projects (around 40) are given to the student during the semester. Sample examination questions: - How does type cast operation work? When do we use it and why? Provide examples of type casting in C. - What is pointer data type used for? When do we use it? What are its advantages? What danger it brings for a program? Provide an example of pointer declaration and initialization. - Describe principles of Object Oriented Analysis, Modelling and Design. - Describe basic elements of relational data model. | | |
| Work placement | Not applicable | | |