



Subject card

| | | | | | | | |
|---|---|---|-------------------------------------|------------|--|---------|-----|
| Subject name and code | Programming, PG_00021027 | | | | | | |
| Field of study | Mathematics | | | | | | |
| Date of commencement of studies | October 2024 | Academic year of realisation of subject | | | 2024/2025 | | |
| 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 | | | 5.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Probability Theory and Biomathematics -> Faculty of Applied Physics and Mathematics | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Paweł Wojda | | | | | |
| | Teachers | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 30.0 | 0.0 | 0.0 | 60 |
| | E-learning hours included: 0.0 | | | | | | |
| | Adresy na platformie eNauczanie: | | | | | | |
| 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 | 5.0 | 60.0 | 125 | | |
| Subject objectives | Mastering the ability to write simple algorithms in the selected programming language; compiling, starting and testing simple programs. Mastering the skill of analyzing simple algorithms. | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | K6_U07 | Student: - designs simple algorithms and their tests. | | | [SU4] Assessment of ability to use methods and tools | | |
| | K6_W08 | Student: - recognizes elements of programs and explains their meaning - enumerates program quality criteria. | | | [SW1] Assessment of factual knowledge | | |
| | K6_W09 | Student: - uses software development tools for C/C++, - uses internet to find information about C/C++ and programming | | | [SW1] Assessment of factual knowledge | | |
| | K6_K03 | Student in laboratory: - implements three independent programs. | | | [SK2] Assessment of progress of work [SK4] Assessment of communication skills, including language correctness [SK3] Assessment of ability to organize work | | |

| Subject contents | <p>Lecture:</p> <p>1. Numbers in computer systems: Computer memory. Integer numbers. Floating-point numbers. Vectors and matrices.</p> <p>2. Iteration: Processor. Conditional instruction. Switching instruction. Loops. Optimization. Searching a number and sorting numbers. Horner algorithm. Disc file operations. Algorithm complexity. Good style of programming. Program testing.</p> <p>3. Alphabet and text: ASCII code and UNICODE. Characters. Strings. Searching and sorting of strings.</p> <p>4. Procedures and functions: Definition, parameters and local variables. Library of functions. Projects. Recursive algorithms</p> <p>5. Data structures: Definition of data structure. Dynamic memory management . Application of data structures</p> <p>6. Class and object: Class definition and application. Object. Constructor. Overloaded methods and operators. "Friend" functions. Inheritance.</p> <p>Laboratory:</p> <p>Implementation of iteration algorithm, program with own functions with teacher help. Three programs without teacher care.</p> | | | | | | | | | | | | | | |
|--|--|-------------------------------|--|--------------------------|---|-------------------------------|--------------------------|--|-------|----------------------|-------|-------|--------------|-------|-------|
| Prerequisites and co-requisites | | | | | | | | | | | | | | | |
| Assessment methods and criteria | <table border="1"> <thead> <tr> <th data-bbox="454 1008 796 1034">Subject passing criteria</th> <th data-bbox="799 1008 1141 1034">Passing threshold</th> <th data-bbox="1144 1008 1482 1034">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="454 1039 796 1066">Two tests</td> <td data-bbox="799 1039 1141 1066">50.0%</td> <td data-bbox="1144 1039 1482 1066">25.0%</td> </tr> <tr> <td data-bbox="454 1070 796 1097">Practical exercise</td> <td data-bbox="799 1070 1141 1097">50.0%</td> <td data-bbox="1144 1070 1482 1097">50.0%</td> </tr> <tr> <td data-bbox="454 1102 796 1128">Lecture test</td> <td data-bbox="799 1102 1141 1128">50.0%</td> <td data-bbox="1144 1102 1482 1128">25.0%</td> </tr> </tbody> </table> | | | Subject passing criteria | Passing threshold | Percentage of the final grade | Two tests | 50.0% | 25.0% | Practical exercise | 50.0% | 50.0% | Lecture test | 50.0% | 25.0% |
| Subject passing criteria | Passing threshold | Percentage of the final grade | | | | | | | | | | | | | |
| Two tests | 50.0% | 25.0% | | | | | | | | | | | | | |
| Practical exercise | 50.0% | 50.0% | | | | | | | | | | | | | |
| Lecture test | 50.0% | 25.0% | | | | | | | | | | | | | |
| Recommended reading | <table border="1"> <tbody> <tr> <td data-bbox="454 1151 796 1352">Basic literature</td> <td colspan="2" data-bbox="799 1151 1482 1352"> Kernighan W., Ritchie B.W.: The ANSI C Programming Language (2nd Edition), Prentice Hall; (April 1, 1988) Eckel B.: Thinking in C++: Introduction to Standard C++, Volume One (2nd Edition), Prentice Hall; (March 25, 2000) </td> </tr> <tr> <td data-bbox="454 1357 796 1411">Supplementary literature</td> <td colspan="2" data-bbox="799 1357 1482 1411"> D. Harel, <i>Algorithmics: The Spirit of Computing</i>, Addison-Wesley, Reading, MA, 1987. 3rd edition, 2004 (with Y. Feldman). </td> </tr> <tr> <td data-bbox="454 1415 796 1442">eResources addresses</td> <td colspan="2" data-bbox="799 1415 1482 1442"></td> </tr> </tbody> </table> | | | Basic literature | Kernighan W., Ritchie B.W.: The ANSI C Programming Language (2nd Edition), Prentice Hall; (April 1, 1988) Eckel B.: Thinking in C++: Introduction to Standard C++, Volume One (2nd Edition), Prentice Hall; (March 25, 2000) | | Supplementary literature | D. Harel, <i>Algorithmics: The Spirit of Computing</i> , Addison-Wesley, Reading, MA, 1987. 3rd edition, 2004 (with Y. Feldman). | | eResources addresses | | | | | |
| Basic literature | Kernighan W., Ritchie B.W.: The ANSI C Programming Language (2nd Edition), Prentice Hall; (April 1, 1988) Eckel B.: Thinking in C++: Introduction to Standard C++, Volume One (2nd Edition), Prentice Hall; (March 25, 2000) | | | | | | | | | | | | | | |
| Supplementary literature | D. Harel, <i>Algorithmics: The Spirit of Computing</i> , Addison-Wesley, Reading, MA, 1987. 3rd edition, 2004 (with Y. Feldman). | | | | | | | | | | | | | | |
| eResources addresses | | | | | | | | | | | | | | | |
| Example issues/ example questions/ tasks being completed | To design an iterative algorithm employing Horner scheme and write a program, in C / C + +, implementing this algorithm. | | | | | | | | | | | | | | |
| Work placement | Not applicable | | | | | | | | | | | | | | |