



Subject card

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| Subject name and code | Advanced Object-oriented Techniques, PG_00048008 | | | | | | |
| Field of study | Informatics | | | | | | |
| Date of commencement of studies | October 2020 | | Academic year of realisation of subject | | 2023/2024 | | |
| Education level | first-cycle studies | | Subject group | | Optional subject group 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 | 4 | | Language of instruction | | Polish | | |
| Semester of study | 7 | | ECTS credits | | 2.0 | | |
| Learning profile | general academic profile | | Assessment form | | assessment | | |
| Conducting unit | Department of Algorithms and Systems Modelling -> Faculty of Electronics, Telecommunications and Informatics | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr inż. Krzysztof Manuszewski | | | | |
| | Teachers | | dr inż. Krzysztof Manuszewski | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 15.0 | 0.0 | 0.0 | 30 |
| | 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 | 30 | | 2.0 | | 18.0 | 50 |
| Subject objectives | The goal is to make student familiar with practical aspects of modern approaches like TDD/BDD/DDD and various tools/practices that support these approaches | | | | | | |

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| Learning outcomes | Course outcome | Subject outcome | Method of verification |
| | [K6_U41] can produce, test or evaluate software using modern programming platforms, tools, languages and paradigms of different levels, as well as use software packages supporting scientific and research processes as well as business decision-making processes and teamwork | Student is able to implement various design patterns | [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment |
| | [K6_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment | Student is able to apply various technics typical for modern methodologies (i.e. UT, refactorisation) for purpose of improvement shape of implementation | [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment |
| | [K6_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study | Is able to manage the technical debt | [SU4] Assessment of ability to use methods and tools |
| | [K6_W06] Knows and understands the basic processes occurring in the life cycle of devices, facilities and systems specific to a given field of study. | Student understand importance and limitations of modern methodologies for process of software development. Student is able to evaluate different approaches for desired effects in codebase | [SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge |
| | [K6_W03] Knows and understands, to an advanced extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum | Student is able to evaluate different approaches for desired effects in codebase | [SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge |
| Subject contents | <ul style="list-style-type: none"> • Technical Debt, refactoring and TDD/BDD • Elements of DDD, AoP • Construction of OO systems • Solid principles in practice • Importance of Design patterns • Classification of patterns | | |
| Prerequisites and co-requisites | Modern, high level object oriented languagess. Prefered C#. | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | exam | 50.0% | 20.0% |
| | homework | 50.0% | 20.0% |
| | laboratories | 50.0% | 60.0% |

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| Recommended reading | Basic literature | <p>Czysta architektura : struktura i design oprogramowania : przewodnik dla profesjonalistów, Robert C. Martin, Helion 2018</p> <p>Adaptywny kod zwinne programowanie, wzorce projektowe i SOLID-ne zasady, Gary McLean Hall, Helion 2018.</p> <p>R.Martin. Czysty kod, Helion 2014</p> <p>Wzorce projektowe, Eric Freeman, Elisabeth Freeman, Bert Bates, Kathy Sierra, Helion 2017</p> |
| | Supplementary literature | <p>Pragmatyczny programista : od czeladnika do mistrza, Andrew Hunt, David Thomas, Helion 2017</p> <p>Oprogramowanie łatwe w utrzymaniu : pisz kod podatny na przyszłe zmiany, Joost Visser,</p> <p>Helion. 2017</p> <p>Wzorce projektowe, E. Gamma, R. Helm, R. Johnson, J.M. Vlissides., WNT 2005</p> |
| | eResources addresses | <p>Adresy na platformie eNauczanie:</p> <p>Zaawansowane Techniki Obiektowe 23/24 - Moodle ID: 33858 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33858</p> |
| Example issues/ example questions/ tasks being completed | | |
| Work placement | Not applicable | |