



## Subject card

|   |   |  |   |                                     |   |            |     |
|---|---|--|---|-------------------------------------|---|------------|-----|
| Subject name and code                       | Advanced iOS Application Development, PG_00063917   |  |   |                                     |   |            |     |
| Field of study                              | Informatics   |  |   |                                     |   |            |     |
| Date of commencement of studies             | February 2025   |  | Academic year of realisation of subject |                                     | 2025/2026   |            |     |
| Education level                             | second-cycle studies  |  | Subject group                           |                                     | Optional subject group<br>Specialty subject group<br>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                               | 2   |  | Language of instruction                 |                                     | Polish  |            |     |
| Semester of study                           | 3   |  | ECTS credits                            |                                     | 3.0   |            |     |
| Learning profile                            | general academic profile  |  | Assessment form                         |                                     | exam  |            |     |
| Conducting unit                             | Department of Geoinformatics -> Faculty of Electronics, Telecommunications and Informatics  |  |   |                                     |   |            |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor  |  | mgr inż. Tomasz Idzi                    |                                     |   |            |     |
|   | Teachers  |  | mgr inż. Tomasz Idzi                    |                                     |   |            |     |
| Lesson types and methods of instruction     | Lesson type   | Lecture  | Tutorial                                | Laboratory                          | Project   | Seminar    | SUM |
|   | Number of study hours   | 15.0   | 0.0                                     | 0.0                                 | 0.0   | 15.0       | 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   |   | 6.0                                 |   | 39.0       | 75  |
| Subject objectives                          | The goal is to familiarize the students with two operating systems made by Apple corporation. We also present iOS app development (iOS is one of the two dominant mobile OSs). Subject broadens the knowledge gained by students in the course "SYSTEM OPERACYJNY MAC OS X i iOS" from the 4th semester. In addition, the laboratories have two goals: to let the students use the APIs presented during the lecture, and to improve their overall programming skills by 'forcing' them to learn a new programming language (Swift) and design paradigms. |  |   |                                     |   |            |     |

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| Learning outcomes               | Course outcome   | Subject outcome  | Method of verification  |
|                                 | [K7_U12] is able, to an increased extent, to analyze the operation of components and systems related to the field of study, as well as to measure their parameters and study their technical characteristics, and to plan and carry out experiments related to the field of study, including computer simulations, interpret the obtained results and draw conclusions   | Students, while creating an iOS app, have to debug it multiple times to find and fix the bug. What's more, during the course they are familiar with advanced ways of debugging in the Xcode development environment. | [SU4] Assessment of ability to use methods and tools<br>[SU3] Assessment of ability to use knowledge gained from the subject<br>[SU1] Assessment of task fulfilment |
|                                 | [K7_U07] can apply advanced methods of process and function support, specific to the field of study  | One of the technology which students use during app development is Core Data - object graph and persistence framework provided by Apple. What is more, they have to cover the app by unit and UI tests.              | [SU4] Assessment of ability to use methods and tools<br>[SU1] Assessment of task fulfilment   |
|                                 | [K7_W08] knows and understands, to an increased extent, the fundamental dilemmas of modern civilisation, the main development trends of scientific disciplines relevant to the field of education  | Students know the architecture of macOS and iOS operating systems, and can compare them with *nix OSs. Students develop applications, which are using digital maps, for macOS and iOS systems.                       | [SW1] Assessment of factual knowledge<br>[SU4] Assessment of ability to use methods and tools   |
|                                 | [K7_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, making assessment and critical analysis of the prepared software as well as a synthesis and creative interpretation of information presented with it | Students have to create the app for iOS which will make request to web service, get data, parse and display in specific user interface.  | [SU4] Assessment of ability to use methods and tools<br>[SU1] Assessment of task fulfilment   |
| Subject contents                | <ul style="list-style-type: none"> <li>- Introduction to Mac OS X and iOS systems</li> <li>- Swift: classes, objects</li> <li>- Swift: properties, protocols</li> <li>- Swift: values, collections, closures</li> <li>- Design patterns</li> <li>- Memory management</li> <li>- Data management</li> </ul>   |  |   |
| Prerequisites and co-requisites |  |  |   |
| Assessment methods and criteria | Subject passing criteria   | Passing threshold  | Percentage of the final grade   |
|                                 | Examination  | 50.0%  | 50.0%   |
|                                 | Seminar  | 50.0%  | 50.0%   |

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| Recommended reading  | Basic literature  | 1. Tomasz Idzi; Lecture materials, Online, 2024;<br><br>2. Tomasz Idzi; Lab materials, Online, 2024;<br><br>3. The Swift Programming Language; Online (developer.apple.com), 2024<br><br>4. Develop in Swift; Online (developer.apple.com), 2024 |
|  | Supplementary literature  | 1. Swift - Apple Development (III) - Hemant Kumar, 2024  |
|  | eResources addresses  | Adresy na platformie eNauczanie:   |
| Example issues/<br>example questions/<br>tasks being completed | <ul style="list-style-type: none"> <li>- Developing calculator application</li> <li>- Developing application which uses UICollectionView</li> <li>- Developing application which uses files operations, UITableView and maps</li> <li>- Developing drawing application for iPad device</li> <li>- Developing application which uses Core Data</li> <li>- Gesture recognition in mobile application</li> </ul> |  |
| Work placement   | Not applicable  |  |

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