# SYLLABUS

**Name:** ***Software Development Methodologies (InfAAu-IOT>SM1SDM19)***
**Name in Polish:**
**Name in English:** ***Software Development Methodologies***

## Information on course:

**Course offered by department:** Faculty of Automatic Control, Electronics and Computer Science
**Course for department:** Silesian University of Technology

**Default type of course examination report:**

ZAL

**Language:**

English

**Course homepage:**

https://platforma2.polsl.pl/rau2/course/view.php?id=1007

**Short description:**

The objective of the course is to deliver to the students the latest and up-to-date knowledge on software development methodologies within the Internet of Things world, including Cloud Computing and visualization. The theoretical and practical approach with various hardware platforms, programming languages, and integrated development environments will be presented.

**Description:**

Method of conducting classes: L
ECTS: 1
Total hours: 25h (15h contact hours / 10h student's own work hours)
Laboratory: 15h

Student's own work
Preparation for lab classes, preparation of laboratory reports.

Laboratory:
1) Presentation of modern integrated programming environments, e.g. Visual Studio Code, PlatformIO, ESP-IDF, TI Code Composer Studio, ESP IDF and others.
2) Presentation of modern Cloud Computing platforms and data analysis tools.
3) Presentation of modern graphic engines, their work and use on the example of eg. Unity Engine.

Attendance at laboratory classes is mandatory.

**Bibliography:**

[1] Raivo Sell, Rim Puks, Mallor Kingsepp, Agris Nikitenko, Karlis Berkolds, Anete Vagale, Rudolfs Rumba, Piotr Czekalski, Krzysztof Tokarz, Godlove Kuaban, Oleg Antemijczuk, Jarosław Paduch, Karl Lall, Łukasz Lipka, Salvatore Distefano, Rustem Dautov, Ricardo Di Pietro, Antonino Longo Minnolo, Aleksandr Kapitonov, Dmitrii Dobriborsci, Valerii Chernov, Igor Pantiukhin
Introduction to the IoT (Internet of Things). Coursebook, 2nd edition (2025)., https://iot-open.eu/introduction-to-the-iot-coursebook-2nd-edition/
[2] “ITU Internet Reports 2005: The Internet of Things.” http://www.itu.int/osg/spu/publications/internetofthings/
[3] “Special Report: The Internet of Things”, in “the institute”, IEEE 2014, http://theinstitute.ieee.org/static/special-report-the-internet-of-things
[4] “Towards a definition of the Internet of Things (IoT)”, IEEE 2015
[5] Standard for an Architectural Framework for the Internet of Things (IoT) http://grouper.ieee.org/groups/2413/
[6] Ovidiu Vermesan, Peter Friess (eds.): Digitizing the Industry, Internet of Things Connecting the Physical, Digital and Virtual Worlds, River Publishers Series in Communications, 2016
[7] Vision and Challenges for Realising the Internet of Things, CERP-IoT 2010, http://www.internet-of-things-research.eu/pdf/IoT_Clusterbook_March_2010.pdf
[8] Salim Elbouanani, My Ahmed El Kiram, Omar Achbarou: “Introduction To The Internet Of Things Security. Standardization and research challenges”, 2015 11th International Conference on Information Assurance and Security (IAS), IEEE 2015
[9] Video and reading materials available at distance learning platform: course IOTOPEN2x: IoT Networking and Fog Layer Devices
[10] Video and reading materials available at distance learning platform: course IOTOPEN3x: Data Management, Data Security and Robot Operating System as a Common Tool for IoT
[11] Mike Geig: “Sams Teach Yourself Unity 2018 Game Development in 24 Hours”, Pearson Education, 2018
[12] Jeremy Gibson Bond: “Introduction to Game Design, Prototyping, and Development”, Addison-Wesley Professional; 2 edition, 2017

**Learning outcomes:**

The student knows design patterns used in object-oriented languages - K2A_W07

The student knows methods of creating software in accordance with SOLID principles - K2A_W14

The student has the ability to assess the quality of the code and is able to propose its modification to improve the quality. - K2A_U11

The student is able to apply appropriate design patterns to solve a specific programming problem. - K2A_U12

The student understands the basic problems of creating complex applications. - K2A_K01

**Assessment methods and assessment criteria:**

Form and criteria for passing:

The semester is passed based on the laboratory. The final grade is the average of the grades from all laboratory exercise reports.

Conditions for obtaining a pass:
a) Participation in all laboratory exercises or active participation in remote laboratories.
b) Preparation and electronic submission of reports from all laboratory exercises.

c) All reports must be assessed positively.
d) The final grade is the average of the grades from all reports.

The grade from each laboratory exercise has the same weight.
In the event of an excused absence from the laboratory, the exercise must be made up.

The syllabus is valid from the academic year 2025/2026, and its content is not subject to change during the semester.

## Course credits in various terms:

| **Informatics, full-time master degree studies 3 sem. (InfAAu-SM3)** | | | |
|---|---|---|---|
| Type of credits | Number | First term | Last term |
| European Credit Transfer System (ECTS) | 1 | 2020/2021-Z | |