

SYLLABUS

Name: Java in the Internet and Mobile Devices (InfAAu>SI5Java19)

Name in Polish:

Name in English: Java in the Internet and Mobile Devices

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=477>

Short description:

The purpose of the course is to theoretically and practically familiarize students with the Java language, writing good quality source code and producing portable software for platforms based on the Java virtual machine with attention to communication mechanisms in the Internet.

Class format: contact.

Class participants should have complete knowledge and skills in the subjects: Fundamentals of Computer Programming, Computer Programming, Algorithms and Data Structures, Software Engineering (sem. 4).

Description:

ECTS: 4

Total workload: 100 h (60 h contact hours, 40 h students' own work)

Lecture: 30 h

Laboratory: 30 h

Student's own work: preparation for classes

Detailed lecture content:

General description of the Java language. Embedded data types. Syntax of the language. Differences between Java and C++. Implementation of the idea of object-oriented programming in Java. Classes, interfaces, exception handling, language extensions. Unit testing. JUnit tool. Creating graphical user interfaces using the Swing specification. Designing an accessible GUI. Mechanisms for organizing multithreaded work. Synchronization of threads. Methods of implementing communication using input/output streams. Serialization. Java Servlets specification in developing components for web servers. Collections and design patterns in Java applications. Streaming data processing. JMX technology in managing Java applications and components. Building and running m-grains. Use of the JNI interface in the integration of virtual machine byte code with the machine code of the physical processor. An overview of the Java EE platform specifications. Database applications using JDBC and JPA.

Lab Topics:

- Introduction to Java programming
- GUI design
- High-level programming, advanced data structures
- Software verification
- Components of a web application
- Database applications

Educational methods used: multimedia presentation, software demonstrations, sharing of materials and storage of solutions through a course on the Remote Learning Platform.

Bibliography:

- Cay S. Horstmann, Core Java Volume I – Fundamentals, 11th Edition, ISBN: 978-0135166307, Pearson 2018
- Cay S. Horstmann, Core Java Volume II - Advanced Features, 11th edition, ISBN: 978-0135166314, Pearson 2019
- Herbert Schildt. Java: The Complete Reference, Eleventh Edition 11th Edition, ISBN: 978-1260440232, McGraw-Hill Education 2018

Learning outcomes:

Course-specific learning outcomes: at the completion of the course, student:

- can implement algorithms with Java using design patterns (K1A_U23)
- can develop accessible graphical user interface (K1A_U26)
- is capable of improving software developed in Java by applying mechanisms that enhance its level of abstraction and by utilizing advanced data structures (K1A_U23)
- is able to perform complete verification of software using unit tests (K1A_U15).
- can develop simple web applications using Java technology (K1A_U24)
- can develop simple database applications using Java technology (K1A_U27)

Assessment methods and assessment criteria:

During the course of the labs, students complete six individual assignments during class. A maximum of 20 points can be obtained for each exercise. The assessment is based on: knowledge from the lecture content and those indicated to be acquired during the lectures, the prototype made during the class, the final version of the task made within the framework of own work. The exercise is considered to be passed if the final version is scored at least 1 point.

The grade for passing the class is awarded according to the sum of points earned:

109..120 pts. - grade of 5.0

97..108 pts. - grade 4.5

85..96 pts. - score 4.0

73..84 pts. - score 3.5

61..72 pts. - score 3.0

USOS: Szczegóły przedmiotu: InfAAu>SI5Java19, w cyklu: <brak>, jednostka dawcy: <brak>, grupa przedm.: <brak>

0..60 pts. - grade 2.0 (no credit)

The syllabus is valid from academic year 2024/25 and its content cannot be changed during the semester.

Course credits in various terms:

<without a specific program>

Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	4	2020/2021-Z	

Informatics, full-time first degree engineering studies 7 sem. (InfAAu-SI7)

Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	4	2020/2021-Z	