**1. Course title:**
JAVA IN THE INTERNET AND MOBILE DEVICES

**2. Course code:** JAVA

**3. Validity of course description:** 2018/2019

**4. Level of studies:** 1st cycle of higher education

**5. Mode of studies:** intramural studies

**6. Field of studies:** INFORMATICS

**7. Profile of studies:** general academic

**8. Specialty:** -

**9. Semester:** V

**10. Faculty teaching the course:** Faculty of Automatic Control, Electronics, and Computer Science

**11. Course instructor:** dr inż. Krzysztof Dobosz

**12. Course classification:** common courses

**13. Course status:** obligatory

**14. Language of instruction:** English

**15. Prerequisite qualification:**

**16. Course objectives:**
The aim of the course is theoretical and practical introduction to Java language and the development of portable software applications for platforms based on virtual machines, paying attention to the mechanisms used in web and mobile applications.

**17. Description of learning outcomes:**

<table>
<thead>
<tr>
<th>No.</th>
<th>learning outcomes description</th>
<th>method of assessment</th>
<th>teaching methods</th>
<th>learning outcomes reference codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Student is able to develop Java software and prepare a documentation</td>
<td>written test, computer application</td>
<td>lecture, laboratory</td>
<td>K1A_W09, K1A_W11, K1A_U03, K1A_U23</td>
</tr>
<tr>
<td>2</td>
<td>Student is able to define unit tests</td>
<td>written test, computer application</td>
<td>lecture, laboratory</td>
<td>K1A_U15</td>
</tr>
<tr>
<td>3</td>
<td>Student is able to design a user interface</td>
<td>written test, computer application</td>
<td>lecture, laboratory</td>
<td>K1A_W15, K1A_U26</td>
</tr>
<tr>
<td>4</td>
<td>Student is able to develop applications running on client-server model</td>
<td>written test, computer application</td>
<td>lecture, laboratory</td>
<td>K1A_U24</td>
</tr>
<tr>
<td>5</td>
<td>Student is able to develop web services</td>
<td>written test, computer application</td>
<td>lecture, laboratory</td>
<td>K1A_U24</td>
</tr>
</tbody>
</table>
18. Teaching modes and hours

lecture: 30  laboratory: 30

19. Syllabus description:

Lectures:

- Software verification, unit testing, JUnit library.
- Multithreaded programming. Starting and managing threads. Synchronization.
- Methods of communication implementation, sockets and streams, serialization.
- Java Servlets specification and Java Server Pages in creating components for web servers
- Designing graphical user interfaces.
- Communication with database servers.
- Collections and design patterns in Java applications
- Integration of the virtual machine bytecode with the machine's physical processor code.
- Distributed programming
- Java Enterprise Edition platform
- Programming of mobile devices.

Laboratory:

- Compilation and running applications. Generating documentation.
- Object-oriented programming in Java and unit testing
- Development of web server components
- Client-server communication
- Database applications
- GUI design

During practical exercises, students perform individual tasks including issues practiced during laboratory classes. Selected topics are implemented in the form of applications for mobile devices.

20. Written exam: no

21. Primary sources:

- JDK 10 Documentation (https://docs.oracle.com/javase/10/)

22. Secondary sources:

### 23. Total workload required to achieve learning outcomes

<table>
<thead>
<tr>
<th>No.</th>
<th>teaching mode</th>
<th>contact hours / student workload hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>lecture</td>
<td>30 / 30</td>
</tr>
<tr>
<td>2</td>
<td>classes</td>
<td>- / -</td>
</tr>
<tr>
<td>3</td>
<td>laboratory</td>
<td>30 / 30</td>
</tr>
<tr>
<td>4</td>
<td>project</td>
<td>- / -</td>
</tr>
<tr>
<td>5</td>
<td>BA/MA seminar</td>
<td>- / -</td>
</tr>
<tr>
<td>6</td>
<td>other (exam)</td>
<td>- / -</td>
</tr>
<tr>
<td></td>
<td>total number of hours</td>
<td>60 / 60</td>
</tr>
</tbody>
</table>

**24. Total hours:** 120

**25. Number of ECTS credits:** 4

**26. Number of ECTS credits for contact hours:** 2

**27. Number of ECTS credits for in-practice hours (laboratory, classes, project):** 2

**26. Comments:** -

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approved:

\[ (date, instructor’s signature) \quad \text{and} \quad (date, signature of the Director of the Faculty Unit) \]

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1 ECTS – 30 h