1. **Course title:** BIG DATA, Hadoop ecosystem
2. **Course code:** BG.HE

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

4. **Level of studies:** MSc programme

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

6. **Field of study:**
   CONTROL, ELECTRONIC AND INFORMATION ENGINEERING (MACRO) (FACULTY SYMBOL) RAU-2

7. **Profile of studies:** ACADEMIC

8. **Programme:** DATA SCIENCE

9. **Semester:** 2

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

11. **Course instructor:** dr hab. inż. Dariusz Mrozek

12. **Course classification:** common courses

13. **Course status:** compulsory / elective

14. **Language of instruction:** English

15. **Pre-requisite qualifications:** Databases, Theory of computer science, Computer architecture, Introduction to programming in Java, Computer programming, Programming for the Java Platform, Enterprise Edition

16. **Course objectives:** The aim of the course is to provide students the knowledge necessary to understand Big Data concepts, platforms for processing Big Data (including Hadoop) and their architecture, data storage and transformation solutions, computational models applied on platforms for processing Big Data and developing solutions for Big Data analytics.

17. **Description of learning outcomes:**

<table>
<thead>
<tr>
<th>Nr</th>
<th>Learning outcomes description</th>
<th>Method of assessment</th>
<th>Teaching methods</th>
<th>Learning outcomes reference code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Student understands basic ideas in the area of big data analytics.</td>
<td>Credit</td>
<td>Lecture</td>
<td>K2A_W09, K2A_W10,</td>
</tr>
<tr>
<td>2.</td>
<td>Student can administer advanced systems of data analysis.</td>
<td>Credit</td>
<td>Lecture</td>
<td>K2A_W24, K2A_W25</td>
</tr>
<tr>
<td>3.</td>
<td>Student can elaborate and implement computer program for the chosen platform of big data analysis.</td>
<td>Lab tasks</td>
<td>Lab classes</td>
<td>K2A_W11, K2A_W15, K2A_W16, K2A_W26</td>
</tr>
<tr>
<td>4.</td>
<td>Student can use advanced programming tools for processing big data.</td>
<td>Lab tasks</td>
<td>Lab classes</td>
<td>K2A_U03, K2A_U04</td>
</tr>
<tr>
<td>5.</td>
<td>Student is able to construct an algorithm for analysis of the chosen type of big data.</td>
<td>Lab tasks</td>
<td>Lab classes</td>
<td>K2A_U13, K2A_U14</td>
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<td>6.</td>
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</tbody>
</table>

18. **Teaching modes and hours**

Lecture 15 / BA/MA Seminar / Class / Project / Laboratory 15
19. **Syllabus description:**

**Lecture:**
1. Introduction to Big Data. 5V model.
3. Programming models used in the Hadoop ecosystem.
5. Big data analytics in real word applications.
6. Setting up the Hadoop cluster and administering.
7. Other platforms for Big Data analytics.

**Laboratory:**
1. Hadoop cluster configuration and administering.
2. Storing and processing data in the Hadoop ecosystem.
3. Developing applications in the MapReduce model.

20. **Examination:** semester NO

21. **Primary sources:**

22. **Secondary sources:**

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

<table>
<thead>
<tr>
<th>Lp.</th>
<th>Teaching mode</th>
<th>Contact hours / Student workload hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lecture</td>
<td>15/15</td>
</tr>
<tr>
<td>2</td>
<td>Classes</td>
<td>15/15</td>
</tr>
<tr>
<td>3</td>
<td>Laboratory</td>
<td>/</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</td>
<td>/</td>
</tr>
<tr>
<td></td>
<td><strong>Total number of hours</strong></td>
<td><strong>30/30</strong></td>
</tr>
</tbody>
</table>

24. **Total hours:** 60

25. **Number of ECTS credits:** 2

26. **Number of ECTS credits allocated for contact hours:** 1

27. **Number of ECTS credits allocated for in-practice hours (laboratory classes, projects):** 1

26. **Comments:**

Approved:

(date, Instructor’s signature)  (date, the Director of the Faculty Unit signature)