1. Course title: SOFTWARE CERTIFICATION

2. Course code: SC

3. Validity of course description: 2019/2020

4. Level of studies: 2nd cycle of higher education

5. Mode of studies: intramural studies

6. Field of study: INFORMATICS

7. Profile of studies: general academic

8. Specialty: INDUSTRIAL INFORMATICS SYSTEMS

9. Semester: 1

10. Faculty teaching the course: Institute of Informatics

11. Course instructor: Prof. Andrzej Kwiecień

12. Course classification: common courses

13. Course status: obligatory

14. Language of instruction: English

15. Pre-requisite qualifications:
Fundamentals of computer programming

16. Course objectives:
The goal of the course is to present the necessity of software certification in case of safety related applications. The lecture includes certification problem definition and examples on why certification is important or even requires in some areas. During the lecture international standard on functional safety of electrical/electronic/programmable electronic safety-related systems is presented together with standard on electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen. Requirements and tests for apparatus using software and/or digital technologies is also described.

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 code</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>Knows and understands the life-cycle of software safety</td>
<td>PS, OP</td>
<td>WM</td>
<td>K2A_W10</td>
</tr>
<tr>
<td>W2</td>
<td>Knows and understands the possible outcomes of misoperation of computer software</td>
<td>PS, OP</td>
<td>WM</td>
<td>K2A_W12</td>
</tr>
<tr>
<td>W3</td>
<td>Knows and understands the design rules of safety related programmable devices</td>
<td>PS, OP</td>
<td>WM</td>
<td>K2A_W08</td>
</tr>
<tr>
<td>W4</td>
<td>Knows and understands the software development process according to software certification standards</td>
<td>PS, OP</td>
<td>WM</td>
<td>K2A_W14</td>
</tr>
</tbody>
</table>
18. Teaching modes and hours
Lecture: 15 h, Class: -, Laboratory: -

19. Syllabus description:

Lectures:
- Definition of certification
- Why certification standards are needed?
- When certification is required – examples
- Certification of computer software
- About CENELEC - Comite Europeen de Normalisation ELECtrotechnique, Brussels
- Computer system functional safety
- The life cycle of software safety
- Software design rules
- Standards: IEC 61508, PN-EN 50271

20. Examination: no

21. Primary sources:
- Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen - Requirements and tests for apparatus using software and/or digital technologies, IEC 61508PN-EN 50271

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>15/15</td>
</tr>
<tr>
<td>2</td>
<td>Classes</td>
<td>-</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 (exam)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total number of hours</td>
<td>15/15</td>
</tr>
</tbody>
</table>

24. Total hours: 30

25. Number of ECTS credits: 1

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

27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 0

28. Comments: none

Approved:

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