1. **Course title:** OPERATING SYSTEMS

2. **Course code:** OS

3. **Validity of course description:** 2017/2018

4. **Level of studies:** engineer (undergraduate)

5. **Mode of studies:** INTRAMURAL STUDIES

6. **Field of study:** Macrofaculty

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

8. **Programme:**

9. **Semester:** VI

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

11. **Course instructor:** dr inż Przemysław Skurowski

12. **Course classification:** common courses

13. **Course status:** obligatory

14. **Language of instruction:** English

15. **Pre-requisite qualifications:** Theory of computer science, Computer programming

16. **Course objectives:** The goal of a course is to introduce students into the contemporary operating systems which are considered as environments of effective resource managing environment and user interface layer in modern computer systems. During the course students will get knowledge on configuring and administering of operating systems and on the solutions of classical resource management problems with special focus on processor and memory related tasks.

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 acquires knowledge on fundamentals on general purpose operating systems</td>
<td>Exam</td>
<td>Lecture</td>
<td>K1A_W14</td>
</tr>
<tr>
<td>2</td>
<td>Student acquires practical knowledge on Linux and Windows operating systems</td>
<td>Exam</td>
<td>Lecture</td>
<td>K1A_U21</td>
</tr>
<tr>
<td>3</td>
<td>Student acquires knowledge and basic skills in installation and configuring operating systems</td>
<td>Laboratory tasks</td>
<td>Laboratory</td>
<td>K1A_U21</td>
</tr>
<tr>
<td>4</td>
<td>Student acquires knowledge and basic skills in administering and managing operating systems</td>
<td>Laboratory tasks</td>
<td>Laboratory</td>
<td>K1A_U21</td>
</tr>
<tr>
<td>5</td>
<td>Student acquires knowledge and basic skills in reading reference literature and technical documentation</td>
<td>Laboratory tasks</td>
<td>Laboratory</td>
<td>K1A_U03</td>
</tr>
</tbody>
</table>

18. **Teaching modes and hours**

Lecture / BA / MA Seminar / Class / Project / Laboratory

| 30/ - / - / - / - / 30 |

19. **Syllabus description:**

- **Lectures:**
  
  Topics are related to the general purpose OS and to the general problems present in any kind of OS:
1. Basic concepts in OS topic: definition and fundamental roles, effectiveness criteria, processes, resources, types and architectures of OS
2. OS structure – kernel, drivers, tools, subsystems, interfaces and utilities.
3. Resource management and Inter process communication (IPC), concurrency, interference, mutual exclusion, process synchronization and communication means, semaphores, mailboxes
4. Algorithms and mechanisms of a CPU time sharing
5. Memory organization and allocation, virtual memory, memory protection
6. I/O devices handling in the OS
7. File systems – physical and logical representation
8. Hard disk head movement planning
9. Basics or realtime and distributed OS
10. Description of Windows and Linux OS

**Laboratory:**
Windows 7 – Installation
Windows 7 – Administrative scripts
Windows 7 – Users, groups, permissions
Windows 7 – Basic network
Windows 7 – System services
Windows 7 – Remote access
Linux – Installation and configuration basics
Linux – Users, groups, permissions
Linux – Processes
Linux – Basic network
Linux – multi system collaboration
Linux – Fundamentals of Bash programming

**20. Examination: yes (written)**

**21. Primary sources:**
1. A. Silberschatz, J.L. Peterson, G. Gagne, Operating Systems Concepts, Wiley

**22. Secondary sources:**
2. Linux. Księga eksperta, T. Parker, Helion 1999
3. Dokumentacja systemu Linux – manual
8. Online. MS Webcasts. www.microsoft.com/events/webcasts/
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>30/30</td>
</tr>
<tr>
<td>2</td>
<td>Classes</td>
<td>30/30</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</td>
<td>15/15</td>
</tr>
<tr>
<td></td>
<td><strong>Total number of hours</strong></td>
<td><strong>75/75</strong></td>
</tr>
</tbody>
</table>

24. **Total hours:** 150

25. **Number of ECTS credits:** 5

26. **Number of ECTS credits allocated for contact hours:** 3

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

26. **Comments:**

Approved:

…………………………………………………

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