SYLLABUS

Name: ***Operating Systems (InfAAu>SI4OS19)***
Name in Polish:
Name in English: ***Operating Systems***

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=954

Short description:

The goal of the course is to introduce students into the subject of modern operating systems that are considered as robust resource management environment and user interface layer. During this course students will obtain the basic knowledge on configuring and administering of operating systems and solving classical resource management problems with a particular focus on processor and memory related tasks.

Description:

ECTS: 2
Total workload: 50 hours (30 contact hours, 20 students' own work hours)
Lecture: 30h

Students' own work: preparation for classes, elaboration of measurement results, writing reports, preparation for tests

This semester covers the lecture, laboratory will be realized in the following semester.

Topics are related to the general purpose operating systems and to the general problems present in any kind of modern operating systems:
1. Basic operating systems concepts such as definition and fundamental functionality, efficiency criteria, processes, resources, types and architectures of operating systems
2. Structure of operation systems, kernel, drivers, tools, subsystems, interfaces and utilities
3. Resource and process management: inter-process communication (IPC), concurrency, interference, mutual exclusion, process synchronization and communication means, semaphores, mailboxes
4. Algorithms and mechanisms of CPU time sharing
5. Memory organization and allocation, virtual memory, memory protection
6. I/O devices management in operating systems
7. File systems – physical and logical representation
8. Hard disk head movement planning
9. Fundamental concepts or real-time and distributed operating systems
10. Description of Windows and Linux operating systems

Bibliography:

[1]A. Silberschatz, G. Gagne, and P. B. Galvin, Operating System Concepts, 10th ed. Wiley, 2021.
[2]A. S. Tanenbaum and H. Bos, Modern Operating Systems, 5th ed. Pearson Education, 2023.
[3]W. Stallings, Operating Systems: Internals and Design Principles, Global Edition. Pearson, 2017.
[4]W. R. Stevens and S. A. Rago, Advanced Programming in the UNIX Environment. Addison-Wesley, 2008.

Learning outcomes:

Knowledge:
Student has knowledge of fundamentals on general purpose operating systems.
(K1A_W10, K1A_W11)

Assessment methods and assessment criteria:

Lecture:
Written test with open questions or multiple choice questions
Passing criteria: minimum 50% of correct answers

The syllabus is valid from academic year 2025/26 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)	2	2020/2021-Z	