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| <b>Study programmes:</b> Bachelor studies - Informatics   |                    |                     |   |
| <b>Course name:</b> R225 - Operating systems  |                    |                     |   |
| <b>Lecturers:</b> Miroslav Marić and other lecturers from the Department of Computer Science and Informatics  |                    |                     |   |
| <b>Status:</b> Compulsory   |                    |                     |   |
| <b>ECTS:</b> 6  |                    |                     |   |
| <b>Attendance prerequisites:</b> P100, P101   |                    |                     |   |
| <b>Course aims:</b> Acquisition of general and specific knowledge of the theory of operating systems and the principles of their operation.   |                    |                     |   |
| <b>Course outcome:</b> Student has knowledge of algorithms, policies and principles of the execution of operating systems and of resource management.   |                    |                     |   |
| <b>Course content:</b>  |                    |                     |   |
| <ul style="list-style-type: none"> <li>- Introduction to operating systems: basic concepts; historical overview.</li> <li>- Process management: concurrency, process states and state diagrams; operating system structures (process control block, queues, etc.); schedulers and context switching.</li> <li>- Process scheduling: scheduling policies; processes and threads.</li> <li>- Process synchronization: the critical section problem. Deadlocks: prevention, avoidance and detection; recovery: models and policies.</li> <li>- Memory management: physical memory and memory management hardware; overlays, swapping, partitioning; paging and segmentation; algorithms for page swapping.</li> <li>- IO management: properties of parallel and serial devices; buffering; direct memory access; recovery from errors.</li> <li>- File Systems: basic concepts; directory and disk structure; file system implementation;</li> </ul> |                    |                     |   |
| <b>Literature:</b>  |                    |                     |   |
| <ol style="list-style-type: none"> <li>1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating Systems Concepts, Wiley, 9th Edition.</li> <li>2. Raphael A. Finkel, An Operating Systems Vade Mecum, Prentice Hall, 2nd Edition.</li> <li>3. Andrew S. Tanenbaum, Modern Operating Systems 3rd Edition.</li> <li>4. Marić M., Operativni sistemi, Univerzitet u Beogradu – Matematički fakultet, 2. izdanje.</li> </ol> (The lecturer can choose any other appropriate literature)  |                    |                     |   |
| <b>Number of hours:</b> 5   | <b>Lectures:</b> 3 | <b>Tutorials:</b> 2 | <b>Laboratory:</b> - <b>Research:</b> - |
| <b>Teaching and learning methods:</b> Frontal, interactive and exercises.   |                    |                     |   |
| <b>Assessment (maximal 100 points)</b>  |                    |                     |   |
| <b>Course assignments</b>   | <b>points</b>      | <b>Final exam</b>   | <b>points</b>                           |
| Lectures  | -                  | Written exam        | 70                                      |
| Exercises / Tutorials   | -                  | Oral exam           | -                                       |
| Colloquia   | 30                 | Written-oral exam   | -                                       |
| Essay / Project   | -                  |                     |   |