

| Institute of Cyber-physical Systems | | | 2023/24/2 | | | |
|---|--|----------|-------------------------------------|-----|-----|-----|
| Name of the subject: | Code of the subject: | Credits: | Weekly hours: | | | |
| | | | | lec | sem | lab |
| Virtualised storage systems | NIXVT1CBNE | 4 | full-time | 1 | | 1 |
| Responsible person for the subject: Róbert Lovas Ph.D. habil. | | | Classification: associate professor | | | |
| Subject lecturer(s): Krisztián Póra | | | | | | |
| Prerequisites: | | | | | | |
| Way of the assessment: | Midterm grade | | | | | |
| Course description | | | | | | |
| Goal: | The main purpose of the course is to show the main features of data storage systems, by introducing data storage building blocks, and structures built upon them. By the end of the course students are expected to know the major data storage physical devices (disks, tapes, SSDs, etc.), data storage networks (SAN, NAS, FC, etc.), and generic storage solutions needed to use virtual facilities (like volumes, redundancy structures, multipathing) based on the physical devices. | | | | | |
| Course description: | We start with introducing the fundamental terms of storage infrastructures, then introducing the physical data storage devices, followed by the widely used data storage networks. We follow the logical layered model of data storage architectures, at each layer showing the most frequently used virtualization solutions as well as parameters. The lab practices will correspond to the theoretical overview, where students are allowed to try out in practice what they learn in theory. | | | | | |

| Lecture schedule | |
|--|---|
| Education week | Topic |
| 1. | Storage fundamentals |
| 2. | Historical overview |
| 3. | Physical data storage devices 1 |
| 4. | Physical data storage devices 2 |
| 5. | Data storage structures: JBOD, partitions, RAID |
| 6. | Data storage architectures 1, DAS, NAS |
| 7. | Data storage architectures 2, SAN |
| 8. | Holiday - Easter |
| 9. | Data storage protocols 1, FC, AoE, FCoE |
| 10. | Data storage protocols 2, SCSI, iSCSI |
| 11. | File systems |
| 12. | Midterm test |
| 13. | Midterm presentation |
| 14. | Replacement of midterm test or the presentation |
| Mid-term requirements | |
| Conditions for obtaining a mid-term grade/signature | The midterm test must be passed, and the midterm presentation must be documented and presented. |
| Assessment schedule | |
| Education week | Topic |
| 12. | Midterm test |
| 13. | Midterm presentation |
| 14. | Replacement of midterm test or presentation |
| Method used to calculate the <i>mid-term grade</i> (to be filled out only for subjects with mid-term grades) | |

| Theoretical Moodle test and practical midterm test. The completed midterm presentation will modify the final result with -1/0/+1 grade. | | | | | | | | | | | | | |
|--|--|-----------------|-------|----------|---------------|----------|----------|----------|-------------|----------|------------------|---------|------------|
| Type of the replacement | | | | | | | | | | | | | |
| Type of the replacement of written test/mid-term grade/signature | In week 14 it is possible to retake the midterm test or redo the midterm presentation. | | | | | | | | | | | | |
| Type of the exam (to be filled out only for subjects with exams) | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Calculation of the exam mark (to be filled only for subjects with exams) | | | | | | | | | | | | | |
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| Final grade calculation methods: | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Achieved result</th> <th>Grade</th> </tr> </thead> <tbody> <tr> <td>89%-100%</td> <td>excellent (5)</td> </tr> <tr> <td>76%-88<%</td> <td>good (4)</td> </tr> <tr> <td>63%-75<%</td> <td>average (3)</td> </tr> <tr> <td>51%-62<%</td> <td>satisfactory (2)</td> </tr> <tr> <td>0%-50<%</td> <td>failed (1)</td> </tr> </tbody> </table> | Achieved result | Grade | 89%-100% | excellent (5) | 76%-88<% | good (4) | 63%-75<% | average (3) | 51%-62<% | satisfactory (2) | 0%-50<% | failed (1) |
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| 0%-50<% | failed (1) | | | | | | | | | | | | |
| References | | | | | | | | | | | | | |
| Obligatory: | Materials published on the Moodle site of the subject. | | | | | | | | | | | | |
| Recommended: | | | | | | | | | | | | | |
| Other references: | | | | | | | | | | | | | |