

**BPI2226**  
**Linux and shell programming**  
Kurzusunformáció

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**Course Syllabus**

Week	Module Title	Key Topics & Commands
1	Introduction to Linux & The CLI	History, Distros, Kernel vs. Shell. SSH connection. Basic navigation: pwd, ls, cd, man, history. Directory structure (FHS).
2	File Management Essentials	Creating, moving, deleting files/dirs: touch, mkdir, cp, mv, rm. Wildcards/Globbing (*, ?). Hidden files.
3	Text Editors & Viewing Content & Git	Essential editors: nano (or vim basics). Viewing files: cat, less, more, head, tail. Checksums (md5sum). Git Basics.
4	Permissions & Ownership	Users and Groups. File modes. chmod (symbolic & octal), chown, chgrp. sudo and root privileges.
5	I/O Redirection & Pipes	Standard Streams (stdin, stdout, stderr). Redirection (>, >>, 2>). Piping (   ).
6	Filters & Text Processing (Part 1)	Searching and sorting data. grep (basic regex), sort, uniq, wc, cut, tr.
7	MID-TERM EXAM	<b>Practical Assessment (Topics from Weeks 1-6)</b>
8	Introduction to Shell Scripting	Shebang (#!/bin/bash). Execution permissions. Variables (system vs. user). Comments. echo vs printf.
9	Logic & Control Flow	Conditional statements: if, elif, else. Test operators ([ ], [[ ]]). File tests (-f, -d) and String/Integer comparisons.
10	Loops & Iterations	for loops (C-style and list-based). while and until loops. Breaking infinite loops. seq.

<b>11</b>	<b>Advanced Text Processing (Part 2)</b>	Introduction to sed (stream editor) and awk basics for column manipulation. Complex Regex in scripts.
<b>12</b>	<b>Functions, Arrays &amp; Arguments</b>	Positional parameters (\$1, \$@, \$#). Writing modular scripts with functions. Basic Array usage. Exit codes (\$?).
<b>13</b>	<b>Process Management &amp; Scheduling</b>	Processes: ps, top, htop, kill, pkill. Background/Foreground jobs (&, bg, fg). Scheduling with cron and at.
<b>14</b>	<b>FINAL EXAM</b>	<b>Comprehensive Practical Assessment (Scripting Focus)</b>

### Attendance at classes

Participation in practical classes is mandatory. The permissible amount of absence per semester is three times the number of weekly contact hours of the subject. If this is exceeded, the semester cannot be assessed (TVSz 8.§ 1.)

### Requirement

On the two assessments 5-5 practical tasks must be completed, for which 10 points can be awarded per task. Point limits: 0-49: 1, 50-59-2, 60-69: 3, 70-79: 4, 80-100: 5

An unsuccessful practical grade can be corrected once during the exam period in Neptun.

### Bibliography

- Shotts, W. E. (2019). The Linux command line: A complete introduction (2nd ed.). No Starch Press.
- Robbins, A., & Beebe, N. H. F. (2005). Classic shell scripting: Hidden commands that power modern systems. O'Reilly Media.