| Discipline | OPERATING SYSTEMS | code: 37 | **summer semester** |
|---|---|---|---|
| Specialty | Computer Systems and Technologies | | |
| ECTS credits: **7** | Form of assessment: exam | | |
| Lecturer | Assoc. Prof. Hristo Valchanov, PhD<br>Room 207 – 4 E<br>Phone:  +359 52 383 278; 439<br>E-mail: hristo@tu-varna.bg | | |
| Department | Computer Science and Engineering | | |
| Faculty | Faculty of Computing and Automation | | |

Learning objectives:

The subject acquaints the students with the basic principles of modern operating systems. Structure of operating systems is explained, functions of the individual components are described. Particular attention is paid to the parallel operation of processes, providing multitasking and multiuser work in any modern operating system. The problems that arise with simultaneous access of multiple processes to shared resources are presented. Classical methods and algorithms are addressed to solve these problems.

The laboratory exercises demonstrate the workings of the main components of the operating system - basic commands, work with the command interpreter, the file system. Particular attention is paid to the means and algorithms for solving the problem of competitive access of parallel processes to common resources.

<div align="center">CONTENTS:</div>

| Training Area | Hours lectures | Hours seminar exercises |
|---|---|---|
| Operating systems - principles. Structure and functions of OS. | 3 | 3 |
| Processes. States of processes. Work of parallel processes. | 3 | 3 |
| Critical Sections. Mutual exclusion of parallel processes to shared resources. | 3 | 3 |
| Mutexes, semaphores and monitors. | 3 | 3 |
| Process scheduling. Scheduling algorithms. | 3 | 3 |
| Organization and management of memory. | 3 | 3 |
| Paging. Segmentation. | 3 | 3 |
| Virtual memory. Swapping. | 3 | 3 |
| File system. File operations. Directories. | 3 | 3 |
| Computer security. Access control | 3 | 3 |
| TOTAL:    60 h | **30** | **30** |