

Operating Systems - 31261

Course hours: 2 lecture, 2 laboratory

Credits: 3.0

Lecturer: Mr. Ofer Tzur

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Consulting hours: Tuesdays between 12:30 – 13:30 room EM301b

Tutor: Mr. Yonatan Sade

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Prerequisites: 31616 – C language, 31280 – Python programming

Grade Composition:

40% - 2 projects (submission is mandatory)

15% - First project. Individual submission.

25% - Final project. Submission in pairs.

Failure to submit any one of the projects will result in zero grade.

60% - final exam – must pass the exam (grade 55) in order to pass the course.

Attendance of at least 10 lab lessons is mandatory for getting a grade.

Course Objectives:

Students will be able to understand how modern operating systems work, and how to interact with them efficiently and utilize the available resource in an optimal manner.

The second part of the course will introduce the concurrent programming concept, enabling the programs to utilize all the available resources of a computer system, speeding the work.

We will learn both theoretical and practical aspects in class and in the homework projects. In order to gain deeper understanding we will implement part of the solutions. Therefore, the course will include a substantial programming component using the Python language (that will be taught in the first weeks of the course).

As can be seen from the topics list, we will be covering a lot of material. I expect the course to be challenging, in terms of material and workload.

Although, we are going to cover all the material needed, you are expected to continue your exercises outside of class, in order to gain the most out of this course.

Course partial topics:

1. Historical overview of mainstream operating systems: Unix, Windows, Linux, Android.
2. Design, implementation, and architecture of operating systems.
3. Process synchronization, inter-process communication, processor scheduling. Interrupt handling. device management, I/O, file systems. Memory management, virtual memory.
4. Concurrent programming, time-sharing systems (single processor, multiple processors and multiple cores), threads, deadlocks, semaphores.
5. Hands-on study of Windows and Linux operating system design and usage.

Course reading material:

1. *Silberschatz and Galvin*. Operating Systems Concepts. 8th edition, 2008, John Wiley & Sons, Inc.
2. *Andrew S. Tanenbaum*. Modern Operating Systems, 3/e. Prentice-Hall 2007
3. *Bovet and Cesati*. Understanding the Linux Kernel. 3rd edition, 2005, O'Reilly.
4. *Robert Love*. Linux Kernel Development. Third Edition, 2010, Addison-Wesley Professional.

Platforms:

Windows 7/8/10

Linux – Mint, Android

Software Languages:

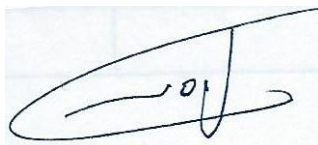
Python, C, Bash – scripts

תאריך : 26.8.19



חתימת המרצה :

תאריך : 8/9/2019



אישור ראש המחלקה :