

0205503 OPERATING SYSTEMS

Normal Education

Evening Education

Fall 2018-2019

**Course Format:** face-to-face

**INSTRUCTOR INFORMATION**

**Instructor:**

**Title:**

**Office:**

**Phone:**

**Office Hours:**

**E-mail:**

**COURSE DESCRIPTION**

**Credit hours:**

**ECTS**: 5

**Required or elective:** *Required for Computer Engineering Students*

**Catalog Description:***Introduction to operating systems, operating system structures, processes, threads, process synchronization, microprocessor task scheduling, deadlocks, main memory, virtual memory, file system interface, input / output systems, protection and security.*

**Prerequisites:**

**Textbook(s) and/or required materials:** *Andrew S. Tanenbaum, Modern Operating Systems, 3rd ed., Pearson Education, Inc, Upper Saddle River, NJ, 2009.*

***Course Objectives***

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| ***The objectives of this course are to:*** |
| *1* | *To teach the students the basic tasks of a general purpose operating system and the main approaches and algorithms that the operating system monitors during these tasks.* |
| *2* | *Understand the management of a computer hardware* |
| *3* | *Equip students with basic knowledge that enables them to develop system programs close to computer hardware.* |

**Course Topics**

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| ***No*** | ***Course Content*** |
| *1* | *Overview of an Operating System, Historical Evolution of Operating Systems* |
| *2* | *Process Management : Processes* |
| *3* | *Threads* |
| *4* | *Process Synchronization*  |
| *5* | *Critical Region and Solutions to Critical Region Problem : Software and Hardware-based Solutions, Semaphores* |
| *6* | *Job Scheduling Algorithms-I*  |
| *7* | *Job Scheduling Algorithms-II ,* *Deadlocks* |
| *8* | *Midterm Exam*  |
| *9* | *Memory Management : Paging*  |
| *10* | *Memory Management : Segmentation*  |
| *11* | *Virtual Memory, Demand Paging*  |
| *12* | *Page Replacement Algorithms*  |
| *13* | *Hard Disc Management, Input/Output Management*  |
| *14* | *Final Exam* |

**Course Learning Outcomes**

*At the end of the course, students;*

* *The student remembers previously learned basic knowledge about computer hardware and underlines the relationship between the hardware and the operating system.*
* *The student understands how an operating system handles process management, memory management, input/output management and file management tasks; he/she also comprehends the working structure of the multithreading model.*
* *The student notices the similarity of some administrative problems of an operating system to some real life problems; and to solve these problems he/she determines the appropiate algorithms or develops new ones.*
* *The student implements the algorithms encountered in the operating systems using a modern programming language.*
* *The student understands and gains detailed knowledge about the working principles of modern operating systems; using this knowledge he/she effectively manages computer hardware in his/her own developed system programs.*
* *The student acquires introductory knowledge about parallel programming.*

**Evaluation methods**

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| *1. Midterm Exam* | 40% |
| *2. Final Exam* | 60% |

**Professional component**

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| --- | --- |
| *Engineering topics* | 100% |
| *General education* | 0% |
| *Mathematics and basic sciences* | 0% |

**Person(s) who prepared this description and date of preparation**

*İrfan Atabaş April 2018*

**Date of last revision**

*June 2018*