

Content

| Course Code | Course Name | Semester | Theory | Practice | Lab | Credit | ECTS |
|-------------|-------------------|----------|--------|----------|-----|--------|------|
| IT 512 | Operating Systems | 1 | 4 | 0 | 0 | 3 | 8 |

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| Prerequisites | |
| Admission Requirements | |

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| Language of Instruction | English |
| Course Type | Elective |
| Course Level | Masters Degree |
| Objective | This class aims at deepening the notions described during the operating systems introductory class from second year, and the computer hardware class from third year. More precisely, it includes the concepts of process, memory management, input-output management, file system and process communication/synchronization. Laboratory sessions rely on the POSIX version of the C language in order to apply the abstract notions studied during class. |
| Content | <ol style="list-style-type: none">1. Giriş2. Gerekli hatırlatmalar3. İşlemler (process)4. İş parçacıkları (threads)5. İşlemlerin düzenlenmesi6. Bellek yönetimi7. Sayfalama (paging)8. Sanal bellek9. İşlemler arası iletişim10. Senkronizasyon sistemleri |
| References | <ol style="list-style-type: none">1. Course Slides and Notes2. Operating System Concepts, International Student Version, Abraham Silberschatz, Wiley.3. Operating systems, William Stallings, Prentice Hall4. Modern Operating Systems, Andrew Tanenbaum, Prentice Hall |

Theory Topics

| Week | Weekly Contents |
|------|--|
| 1 | Introduction to Operating Systems, Computer Architecture Review, Evolution of OS |
| 2 | Operating Systems Structure Process Definition |
| 3 | Introduction to Linux Operating System and Programming |
| 4 | Processes and Threads |
| 5 | Processes and Threads Practice |
| 6 | Inter-Process Communication |
| 7 | Inter-Process Communication Practice |
| 8 | Introduction to Scheduling Algorithms |
| 9 | Performance Analysis of Scheduling Algorithms |
| 10 | Synchronization Methods, Semaphores, Monitors |
| 11 | Synchronization Practice |
| 12 | Memory Management |
| 13 | Virtual Memory Management |
| 14 | Kernel Programming |