## Course Description

| Course Description | |
|---|---|
| Course Code | YZ 303 |
| Course Name | OPERATING SYSTEMS |
| Prerequisite Courses | |
| Language of the Course | The English |
| Course Coordinator | |
| Instructor(s) | |
| Course Assistants | |
| The aim of the course | To provide theoretical information and practical experience for operating system's structures, methodologies, functions, and algorithms. |
| Course Content | Theoretical concepts, architectures, and current technologies for operating systems used in computer systems. Basic methods and algorithms for operating systems. |

## Weekly Course Content

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| Week 1 | Operating system's principals and concepts. |
| Week 2 | The architecture of computer systems, its main components, system resources and management. |
| Week 3 | Process management, process modeling. |
| Week 4 | Process states, inter-process communication. |
| Week 5 | Process exclusion, race conditions, process synchronization. |
| Week 6 | Semaphores, handling with interrupts, monitors. |
| Week 7 | Process scheduling, performance criteria, performance calculation methods, basic CPU scheduling methods (FCFS, SJF, SRTF, RR, VRR, EDF, etc.). |
| Week 8 | Midterm exam. |
| Week 9 | Deadlocks, deadlock modeling, deadlock detection, and prevention. |
| Week 10 | Memory management, swap area, logical addressing, paging, segmentation, and sharing. |
| Week 11 | Secondary storage management, memory organization, access methods, and their performance calculations. |
| Week12 | Input/Output(I/O) management, current methods in usage, and their functional descriptions. |
| Week 13 | System security, user accounting, and encryption. |
| Week 14 | Setups and configurations for several operating systems. |
| Week 15 | Final exam. |

## Course Learning Outcomes

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|---|---|
| 1 | To learn and analyze operating system structures. |
| 2 | Getting information about calculating system performance. |
| 3 | Getting familiar with system setup and configuration. |
| 4 | Having the ability to select the proper system for a given computer hardware. |
| 5 | To observe system resources and monitor performance. |
| 6 | To calculate system performance and apply the results. |

| Contribution of the Course to Program Qualifications | | Contribution Level |
|---|---|---|
| 01 | The student will have the ability to apply an analytical approach, mathematics and science knowledge in software and engineering issues. | 3 |
| 02 | The student will have the ability to identify, define, formulate and solve a problem in software and computer systems. | 3 |
| 03 | The student will have gains scientific research skills in software and engineering problems, has the ability to design a system, part or process. | 3 |
| 04 | The student will have the ability to use the design capability, techniques and tools required for engineering applications. | 4 |
| 05 | The student will have the ability to design, implement and interpret experimental work and software projects by analyzing the results. | 4 |
| 06 | The student will have the ability to work between disciplines and teamwork. | 3 |
| 07 | The student will have the ability to work in international environments and adapt to different cultures. | 3 |
| 08 | The student will have verbal and written communication skills in Turkish and English. | 3 |
| 09 | The student will have the awareness of the necessity of lifelong learning and the ability to realize it. | 4 |
| 10 | The student will gain knowledge of legal issues with the awareness of professional and ethical responsibility. | 4 |
| 11 | The student will have managerial skills (leadership, organization, time and risk management, quality awareness, efficiency, etc.). | 5 |
| 12 | The student will have the ability to participate in social activities, to acquire regular sports habits and to use time in the best way. | 3 |
| 13 | The student will have the ability to find unusual ways and produce projects. | 3 |
| 14 | The student will have professional self-confidence, being an entrepreneur and taking initiative. | 5 |
| 15 | It is sensitive about the problems of the age and looks after the national interests. | 3 |

## ECTS WORKLOAD

| | Number | Duration (hours) | Number*Duration |
|---|---|---|---|
| Face to face education | 14 | 3 | 42 |
| Out-of-class study time (pre-study, reinforcement) | 8 | 2 | 16 |
| Homeworks | 8 | 6 | 48 |
| Presentation / Seminar preparation | 0 | 0 | 0 |
| Quizzes | 0 | 0 | 0 |
| Preparation for midterm exams | 1 | 8 | 8 |
| midterm exams | 1 | 3 | 3 |
| Project (Semester assignment) | 0 | 0 | 0 |
| Lab | 0 | 0 | 0 |
| field work | 0 | 0 | 0 |
| Preparation for the final exam | 1 | 12 | 12 |
| Semester final exam | 1 | 3 | 3 |
| Research | 8 | 1 | 8 |
| **TOTAL WORKLOAD** | | | **140** |
| **ECTS** | | | **5** |

## Evaluation

| SEMESTER EVALUATION | Number | Contribution Percentage |
|---|---|---|
| Midterm | 1 | 40 |
| Quiz | 0 | 0 |
| Homework | 0 | 0 |
| **SEMESTER TOTAL** | | **40** |
| Contribution rate of mid-term evaluations to success | | 40 |
| Contribution rate of the final exam to success | | 60 |
| **GRAND TOTAL** | | **100** |

| RESOURCES | |
|---|---|
| Textbook | Modern Operating Systems, A. Tanenbaum |
| Helpful Resources | Operating System Concepts, S. Galvin |