# COMPUTER NETWORKS

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| 1 | Course Title: | COMPUTER NETWORKS |
| 2 | Course Code: | BMB3007 |
| 3 | Type of Course: | Compulsory |
| 4 | Level of Course: | First Cycle |
| 5 | Year of Study: | 3 |
| 6 | Semester: | 5 |
| 7 | ECTS Credits Allocated: | 6.00 |
| 8 | Theoretical (hour/week): | 3.00 |
| 9 | Practice (hour/week): | 0.00 |
| 10 | Laboratory (hour/week): | 0 |
| 11 | Prerequisites: | noe |
| 12 | Language: | Turkish |
| 13 | Mode of Delivery: | Face to face |
| 14 | Course Coordinator: | Doç. Dr. PINAR KIRCI |
| 15 | Course Lecturers: | yok |
| 16 | Contact information of the Course Coordinator: | Bilgisayar müh. bölüm binası 1. kat oda 110<br><br>pinarkirci@uludag.edu.tr |
| 17 | Website: | |
| 18 | Objective of the Course: | The aim of this course is to provide students with ability to explain data communications, concepts of computer networks, history of networks, physical communication media, communication protocols, classification of communication protocols, layered systems, network architecture and Open Systems Interconnection (OSI) referance model; the ability to recognize OSI layers and their functions, concepts of Internetworking, TCP/IP referance model, functions and protocols of TCP/IP referance model; the ability to resolve the structure of IP address system and to explain functioning of the other protocols in the TCP/IP suite. |
| 19 | Contribution of the Course to Professional Development: | To learn data communications and concepts of computer networks |
| 20 | Learning Outcomes: | |

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| | 1 | To provide students with ability to define the computer networks and to classify then according to various criteria. |
| | 2 | To provide students with ability to explain the history of computer networks. |
| | 3 | To provide students with ability to explain the concepts of data communications. |
| | 4 | To provide students with ability to classify of communications protocols. |
| | 5 | To provide students with ability to understand the layering of protocols and network architectures. |
| | 6 | To provide students with ability to explain the OSI referance model and functions of its layers. |
| | 7 | To provide students with ability to define internet concepts and TCP / IP referance model. |
| | 8 | To provide students with ability to explain the next generation of Internet Protocol. |
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| 21 | Course Content: | |
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| | **Course Content:** | |
| Week | Theoretical | Practice |
| **1** | Introduction to Computer Networks, Classification of Computer Networks | |
| **2** | Advantages of Computer Networks, History of Computer Networks, Structure of Computer Networks, Network Topologies | |
| **3** | Fundamentals of Data Communication, Analog and Digital Data Transmission, Data Encoding Techniques, Multiplexing, Asynchronous and Synchronous Transmission | |
| **4** | Unicast, Multicast, Broadcast concepts, Data Flow, Data Communication Media | |
| **5** | Classification of Communications Protocols | |
| **6** | Layered Systems and Network Archtitecture, Communication between layers, International Standards Organisations, Introduction to OSI Referance Model, Physical Layer, Data Link Layer, Frame Construction | |
| **7** | Error Detection, Flow Control, Error Correction, “Parity Check”, “Block Sum Check”, Cyclic Redundancy Check”, Network Layer, Congestion Control | |
| **8** | Congestion Control Algortihms, Transport | |
| **9** | Routing Algortihms in Computer Networks | |
| **10** | Internet Concepts, Internet Architecture and Addresses, Special IP Addresses, Address Resolution, Address Resolution Protocol | |
| **11** | Datagram Format, IP Encapsulation, Fragmentation and Reassembly, The Future | |
| **12** | Internet Control Message Protocol (ICMP), | |
| **13** | Introduction to Domain Name System (DNS), History of DNS, Structure of DNS | |
| **14** | Server Hierarchy, Resolving A Name, E-Mail Transfer Protocols, File Transfer Protocol | |

| Activites | Number | Duration (hour) | Total Work Load (hour) |
|---|---|---|---|
| Theoretical | 14 | 3.00 | 42.00 |
| Practicals/Labs | 0 | 0.00 | 0.00 |
| Self study and preperation | 14 | 7.00 | 98.00 |
| Homeworks | 0 | 0.00 | 0.00 |
| Projects | 0 | 0.00 | 0.00 |
| Field Studies | 0 | 0.00 | 0.00 |
| Midterm exams | 1 | 15.00 | 15.00 |
| Others | 0 | 0.00 | 0.00 |
| Final Exams | 1 | 18.00 | 18.00 |
| Total Work Load | | | 188.00 |
| Total work load / 30 hr | | | 5.77 |
| ECTS Credit of the Course | | | 6.00 |

| 22 | Textbooks, References and/or Other Materials: | 1) FOROUZAN, B.A.; Data Communications and Networking, Fourth Ed., McGraw Hill., ISBN: 978-0-07-296775-3, 2007<br>2) TANENBAUM, A.S.; Computer Networks, Fourth Edition, Prentice Hall, 2003, ISBN-0-13-038488-7<br>3) KUROSE,J.F. – ROSS,K.W. ; Computer Networking; Addison-Wesley Comp.; Second Edition; 2003; ISBN-0-201-97699-4<br>4) Comer, D. E., Computer Networks and Internets, 5th Edition, Prentice Hall, 2008, ISBN-0136066984 |
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| **23** | Assesment | |

| **TERM LEARNING ACTIVITIES** | **NUMBER** | **WEIGHT** |
|---|---|---|
| Midterm Exam | 1 | 40.00 |
| Quiz | 0 | 0.00 |

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| Home work-project | 0 | 0.00 |
| Final Exam | 1 | 60.00 |
| Total | 2 | 100.00 |
| Contribution of Term (Year) Learning Activities to Success Grade | | 40.00 |
| Contribution of Final Exam to Success Grade | | 60.00 |
| Total | | 100.00 |
| Measurement and Evaluation Techniques Used in the Course | | written exam |

## 24 ECTS / WORK LOAD TABLE

## 25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

| | PQ1 | PQ2 | PQ3 | PQ4 | PQ5 | PQ6 | PQ7 | PQ8 | PQ9 | PQ10 | PQ11 | PQ12 | PQ13 | PQ14 | PQ15 | PQ16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ÖK1** | 3 | 3 | 4 | 2 | 2 | 2 | 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **ÖK2** | 5 | 1 | 3 | 3 | 4 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **ÖK3** | 3 | 2 | 4 | 3 | 3 | 4 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **ÖK4** | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **ÖK5** | 2 | 3 | 4 | 3 | 2 | 3 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **ÖK6** | 3 | 4 | 1 | 3 | 2 | 2 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **ÖK7** | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **ÖK8** | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**LO: Learning Objectives PQ: Program Qualifications**

| Contribution Level: | 1 very low | 2 low | 3 Medium | 4 High | 5 Very High |
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