

Course Description Form	
Course Code and Name	5271329 Advanced Computer Networks
Course Semester	Fall-Spring
Catalog Content	Fundamental design principles of the Internet, Switching and routing, Addressing and Naming, Congestion control in the Internet, Content delivery networks (CDN), peer-to-peer networks (P2P), Traffic classification and network measurement, Traffic engineering, virtualization and data centers, Fundamentals of virtual networks, Measurement and resource management in virtual networks, Software- defined networks (SDN), New Internet architecture design efforts, role of network virtualization and infrastructure- service provider separation, Network security, attacks and defense methods
Textbook	Larry Peterson, Bruce Davie, "Computer Networks: A Systems Approach"
Supplementary Textbooks	James Kurose, Keith Ross "Computer Networking: A Top-Down Approach"
Credit	8
Prerequisites of the Course (Attendance Requirements)	There is no prerequisite or co-requisite for this course.
Type of the Course	Elective
Instruction Language	Turkish
Course Objectives	Teaching to comprehend the current Internet architecture and understand recent developments and future trends in computer networking are among the objectives of this course.
Course Learning Outcomes	Students who succeeded in this course will: 1. Comprehend the current Internet architecture 2. Understand recent developments and future trends in computer networking 3. Prepare and present a project on computer networks
Instruction Methods	The mode of delivery of this course is face to face
Weekly Schedule	1. Week: Fundamental design principles of the Internet 2. Week: Switching and routing 3. Week: Addressing and naming 4. Week: Congestion control in the Internet 5. Week: Content delivery networks (CDN), peer-to-peer networks (P2P) 6. Week: Traffic classification and network measurement 7. Week: Traffic engineering, virtualization and data centers 8. Week: Fundamentals of virtual networks 9. Week: Measurement and resource management in virtual networks 10. Week: Software-defined networks (SDN) 11. Week: New Internet architecture design efforts, role of network virtualization and infrastructure-service provider separation 12. Week: New Internet architecture design efforts, role of network virtualization and infrastructure-service provider separation 13. Week: Network security, attacks and defense methods 14. Week: Network security, attacks and defense
Teaching and Learning Methods <i>(These are examples. Please fill which activities you use in the course)</i>	Weekly theoretical course hours Reading Activities Studies Report preparing Preparing a Presentation Presentations Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam

Assessment Criteria		Numbers	Total Weighting (%)				
	Midterm Exams	1	30				
	Assignment	2	10				
	Application						
	Projects	1	20				
	Practice						
	Quiz						
	Percent of In-term Studies (%)		60				
	Percentage of Final Exam to Total Score (%)		40				
Attendance							
Workload	Activity	Total Number of Weeks	Duration (weekly hour)	Total Period Work Load			
	Weekly Theoretical Course Hours	14	3	42			
	Weekly Tutorial Hours						
	Reading Tasks	14	3	42			
	Studies	14	3	42			
	Material Design and Implementation						
	Report Preparing	3	5	15			
	Preparing a Presentation	4	5	20			
	Presentations	1	4	4			
	Midterm Exam and Preperation for Midterm Exam	1	15	15			
	Final Exam and Preperation for Final Exam	1	20	20			
	Other (should be emphasized)						
	Total Workload			200			
	Total Workload / 25			8			
	Course Credit (ECTS)			8			
Contribution Level Between Course Learning Outcomes and Program Outcomes	No	Program Outcomes	1	2	3	4	5
	1	Reaches the expansion of knowledge by conducting scientific research in the field of engineering and evaluation, interpretation and application of information.					X
	2	Has extensive and in depth knowledge including the latest techniques, methods applied and their limitations in engineering.					X
	3	Completes and applies knowledge by using scientific methods by using limited or missing data and integrates information from different disciplines.				X	
	4	Be aware of new and developing practices of the profession, examines and learns when needed.					X

	5	Defines and formulates problems related to the field, develops methods to solve them and applies innovative methods in solutions.				X	
	6	Develops new and / or original ideas and methods, designs complex systems or processes and develops innovative / alternative solutions in their designs.				X	
	7	Designs and applies theoretical, experimental and modeling based researches, examines and solves the complex problems encountered in this process.					X
	8	Works effectively in disciplinary and multidisciplinary teams, leads such teams and develops solution approaches in complex situations, works independently and takes responsibility.			X		
	9	Communicates oral and written using a foreign language at least at the level of European Language Portfolio B2.	X				
	10	Conveys the process and results of the studies in written and oral form in a systematic and clear manner in national and international environments within or outside the field.					X
	11	Knows the social, environmental, health, security, legal aspects of engineering applications; project management, and business lifeX applications and be aware of the constraints of these engineering applications.					
	12	Considers social, scientific and ethical values in the stages of data collection, interpretation and announcement and in all professional activities.	X				
The Course's Lecturer(s) and Contact Informations		Assist. Prof. Dr. Mehmet Demirci mdemirci@gazi.edu.tr					