<table>
<tr><th colspan="2">Course Description Form</th></tr>
<tr><td>Course Code and Name</td><td>5301329 Software Defined Networks</td></tr>
<tr><td>Course Semester</td><td>Fall-Spring</td></tr>
<tr><td>Catalog Content</td><td>Fundamentals of SDN, History and evolution of SDN: programmable networks and virtual networks, Control plane and data plane, Controllers and OpenFlow, Using OpenFlow and Mininet virtual network, Network virtualization and resource allocation in SDN, NFV and VNF management, Programmable data plane, SDN programming languages and Northbound API, SDN use cases and applications, SDN, NFV and 5G, Network virtualization and slicing in 5G, SDN security</td></tr>
<tr><td>Textbook</td><td>Software Defined Networks: A Comprehensive Approach, Paul Goransson, Chuck Black and Timothy Culver, Second Edition</td></tr>
<tr><td>Supplementary Textbooks</td><td>-</td></tr>
<tr><td>Credit</td><td>8</td></tr>
<tr><td>Prerequisites of the Course
(Attendance Requirements)</td><td>There is no prerequisite or co-requisite for this course.</td></tr>
<tr><td>Type of the Course</td><td>Elective</td></tr>
<tr><td>Instruction Language</td><td>Turkish</td></tr>
<tr><td>Course Objectives</td><td>Teaching to understand the history and evolution of software-defined networks and gain experience on SDN applications are among the objectives of this course.</td></tr>
<tr><td>Course Learning Outcomes</td><td>Students who succeeded in this course will:
1. Understand the history and evolution of software-defined networks (SDN)
2. Examine the role of SDN ın the current and future internet
3. Gain experience on SDN applications
4. Understand the relationship between SDN and critical complementary technologies such as network virtualization and NFV</td></tr>
<tr><td>Instruction Methods</td><td>The mode of delivery of this course is face to face</td></tr>
<tr><td>Weekly Schedule</td><td>1. Week: Fundamentals of SDN
2. Week: History and evolution of SDN: programmable networks and virtual networks
3. Week: Control plane and data plane
4. Week: Controllers and OpenFlow
5. Week: Using OpenFlow and Mininet virtual network
6. Week: Using OpenFlow and Mininet virtual network
7. Week: Network virtualization and resource allocation in SDN
8. Week: NFV and VNF management
9. Week: Programmable data plane
10. Week: SDN programming languages and Northbound API
11. Week: SDN use cases and applications
12. Week: SDN, NFV and 5G
13. Week: Network virtualization and slicing in 5G
14. Week: SDN security</td></tr>
<tr><td>Teaching and Learning Methods

(These are examples. Please fill which activities you use in the course)</td><td>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</td></tr>
<tr><td>Assessment Criteria</td><td>
<table>
<tr><th></th><th>Numbers</th><th>Total Weighting (%)</th></tr>
<tr><td>Midterm Exams</td><td>1</td><td>20</td></tr>
<tr><td>Assignment</td><td>2</td><td>10</td></tr>
<tr><td>Application</td><td></td><td></td></tr>
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Projects	1	30	
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	8	4	32
Studies	14	4	56
Material Design and Implementation			
Report Preparing	4	4	16
Preparing a Presentation	1	3	3
Presentations	1	1	1
Midterm Exam and Preperation for Midterm Exam	1	20	20
Final Exam and Preperation for Final Exam	1	30	30
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 life applications and be aware of the constraints of these engineering applications.	X				
	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	Name Surname: Dr. Öğr. Üyesi Mehmet DEMİRCİ E-mail address: mdemirci@gazi.edu.tr						