

COURSE PROFILE

Course Name	Code	Semester	Term	Theory+PS+Lab (hour/week)	Local Credits	ECTS
Routing Protocols and Concepts	IT489	Spring	7	3 + 0 + 0	3	6

Prerequisites	Consent of Instructor
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Course Language	English
Course Type	Departmental Elective
Course Lecturer	Assist. Prof. Dr. Cüneyt Sevgi
Course Assistant	
Course Objectives	<p>This course aims to provide an understanding of:</p> <ul style="list-style-type: none"> • router components, • basic configuration using Cisco IOS • static and dynamic routing • troubleshooting the problems caused inherently by static routing and different dynamic routing protocols • creating a simple network, configure and test it
Course Learning Outcomes	<p>After successfully completing the course, the student will be able to:</p> <ul style="list-style-type: none"> • understand router components • make basic configuration using Cisco IOS • learn static and dynamic routing • troubleshoot the problems caused inherently by static routing and different dynamic routing protocols • create a simple network, configure and test it.
Course Content	<p>Introduction to Routing and Packet forwarding: The router components and configuration using the Cisco IOS. Building the routing table. Path determination and switching functions of a router. Static routing. Introduction and classification of Dynamic Routing Protocols: Metrics and administrative distances. Distance Vector Routing Protocols: RIPv1 and RIPv2. Variable Length Subnet Masking and CIDR. EIGRP operation and configuration. Link-State Routing Protocols: OSPFv2 operation and configuration.</p>

COURSE CONTENT

Week	Subjects	Related
1	Discussion of the course objectives and introduction.	
2	Chapter 6 and 11 of IT205 (Review)	
3	Ch.1 – Introduction to Routing and Packet Forwarding: Inside the router. CLI configuration and addressing. Building a routing table. Path determination and switching functions. Router configuration labs.	
4	Ch.2 – Static Routing: Introduction to static routing. Routers and networks. Exploring directly connected networks. Static routes with next hop addresses. Static routes and exit interfaces. Default static routes. Managing and troubleshooting static routes. Static routes configuration labs.	
5	Ch.3 – Introduction to Dynamic Routing: Introduction to dynamic routing and its advantages. Classification of dynamic routing protocols. Metrics and routing protocols. Administrative distances. Routing protocols and subnetting activities.	
6	Ch.4 – Distance Vector Routing Protocols: Introduction to distance vector routing protocols. Network discovery. Routing table maintenance. Routing loops. Today's distance vector routing protocols. Labs.	
7	Ch. 5 – RIP V.1: Introduction to RIPv1. Basic RIPv1 configuration. Verification and troubleshooting. Automatic summarization. Default route and RIPv1. RIPv1 configuration labs.	
8	Ch.6 – VLSM and CIDR: Classful and classless addressing. VLSM. CIDR. VLSM and route summarization activity.	
9	Ch.7 – RIP V.2: Limitations of RIPv1. Configuring RIPv2. VLSM and CIDR. RIPv2 configuration labs.	
10	Ch.8 – The Routing Table: A Closer Look: The structure of routing table. Routing table lookup process. Routing behavior. Routing table labs.	
11	Ch.9 – EIGRP: Introduction to EIGRP. Basic EIGRP configuration. EIGRP metric calculation. DUAL.	
12	Ch. 9 – EIGRP : More EIGRP configurations. EIGRP configurations labs.	
13	Ch.10 - Link-State Routing Protocols: Introduction to link-state routing. Implementation of link-state routing protocols.	
14	Ch.11 – OSPF: Introduction to OSPF. Basic OSPF configuration. The OSPF metric. OSPF and multi-access networks. More OSPF configuration. OSPF configuration labs.	

Course Textbook	CCNA Online Lecture Notes
Recommended References	

Semester Requirements	Number	Percentage of Grade
Attendance/Participation		
Laboratory		10
Application		
Special Course Internship (Work Placement)		
Quizzes/Studio Critics		
Homework Assignments		10
Presentation		
Project		
Seminar/Workshop		
Midterms/Oral Exams		45
Final/Resit Exam		35
Total		100

PERCENTAGE OF SEMESTER WORK		65
PERCENTAGE OF FINAL WORK		35
Total		100

Course Category	Core Courses	
	Major Area Courses	X
	Supportive Courses	
	Media and Management Skills Courses	
	Transferable Skill Courses	

COURSE'S CONTRIBUTION TO PROGRAM

#	Program Qualifications / Outcomes	* Level of Contribution				
		1	2	3	4	5
1	A foundation in mathematics and basic sciences and ability to apply acquired knowledge as they relate to the study and practice of information technology			X		
2	An ability to analyze a problem, identify and define the computing requirements appropriate to its solution, to understand, select and use appropriate technology, tools, standards, protocols, building blocks, and components to solve the problem					X
3	An ability to propose, analyze, design, develop, test and maintain an information technology system including software solutions, security model, computer and network infrastructure, information systems etc. to solve information technology problems		X			
4	An ability to analyze local and global impact of computing on individuals, organizations and society; and the ability to apply information technology techniques, skills, and tools for regular computing practices as well as to improve effectiveness of current methodologies				X	
5	An ability to effectively communicate in oral and written media with all kinds of related audiences; and prepare documentation for this purpose as required	X				
6	An understanding of professional, ethical, legal, and social issues and responsibilities of information technology profession			X		
7	A taste and breadth of knowledge across several social topics outside the immediate requirements of the information technology profession, and the ability to work within heterogeneous teams to accomplish a common goal including people from the information technology area as well as other disciplines		X			
8	An ability to engage in life-long learning and professional development for personal improvement to follow contemporary information technology issues			X		

*1 Lowest, 2 Low, 3 Average, 4 High, 5 Highest

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION

Activities	Number	Duration (Hours)	Total Workload
Course Hours (Including Exams)	14	3	42
Tutorials			
Laboratory			
Application			
Special Course Internship (Work Placement)			
Field Work			
Study Hours Out of Class	14	3	42
Presentations / Seminar			
Project	1	20	20
Preparatory reading	14	3	42
Homework Assignments			
Quizzes			
Midterm Exams	1	3	3
Final / Resit Exam	1	3	3
		Total Workload	152

COURSE CATEGORY

ISCED GENERAL AREA CODES	GENERAL AREAS	ISCED BASIC AREA CODES	BASIC EDUCATIONAL AREAS	
1	Education	14	Teacher Training and Educational Sciences	
2	Humanities and Art	21	Art	
2	Humanities and Art	22	Humanities	
3	Social Sciences, Management and Law	31	Social and Behavioural Sciences	
3	Social Sciences, Management and Law	32	Journalism and Informatics	
3	Social Sciences, Management and Law	38	Law	
4	Science	42	Life Sciences	
4	Science	44	Natural Sciences	
4	Science	46	Mathematics and Statistics	10
4	Science	48	Computer	20
5	Engineering, Manufacturing and Civil	52	Engineering	70
5	Engineering, Manufacturing and Civil	54	Manufacturing and Processing	
5	Engineering, Manufacturing and Civil	58	Architecture and Structure	
6	Agriculture	62	Agriculture, Forestry, Livestock, Fishery	
6	Agriculture	64	Veterinary	
7	Medicine and Welfare	72	Medical	
7	Medicine and Welfare	76	Social Services	
8	Service	81	Personal Services	
8	Service	84	Transport Services	
8	Service	85	Environment Protection	
8	Service	86	Security Services	