Module (Course Syllabus) Catalogue

2025-2026

College/ Institute	College of Erbil Technical Engineering	
Department	Department of Information System Engineering	
Module Name	Network Design & Implementation	
Module Code	NDI704	
Degree	Technical Diploma ☐ Bachler ■ High Diploma ☐ Master ☐ PhD ☐	
Semester	Seven	
Qualification		
Scientific Title		
ECTS (Credits)	6	
Module type	Prerequisite ☐ Core ■ Assist. ☐	
Weekly hours	4	Total Workload=(162) hrs
Weekly hours (Theory)	(2)hr Class	(53)Total hrs Workload
Weekly hours (Practical)	(2)hr Class	(109)Total hrs Workload
Number of Weeks	20	
Lecturer (Theory)	A.Prof. Dr.Reben KURDA	
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Lecturer (Practical)	Dr. Media Ali Ibrahim	
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Websites		

Course Book

Course Description					
Course objectives	This course covers various topics in computer networks. It includes protocols that govern way communication takes place on the network, the parameters for routing and network analysis and dissemination strategies in the static and dynamic networks. The TCP/IP model and other related topics sub-netting huge networks into small networks called subnets basic ethernet LAN implementation, designing Ethernet LANs, understanding IPv4, implementing IPv4, IPv4 design and troubleshooting, IPv4 services, configuring IPv4 routing protocols, implementing IPv6, and wireless LANs.				
Student's obligation	It is the teacher's job to formulate a classroom management plan to facilitate the development of an effective learning environment. The student also has an obligation in the development of a quality learning environment. Following individual rules or expectations is just the beginning. In addition to complying with posted rules, students should be expected to show respect for self and others and meet all behavioural and academic expectations.				
Required Learning Materials					
Evaluation	**Task**		**Weight (Marks)**	**Due Week**	**Relevant Learning Outcome**
	Paper Review				
	Assignme	Homework	6	2	
		Class Activity	2	1	
		Report	5	1	

		Seminar	5	1	
		Essay			
		Project			
	Lab Report & Activity		9	1-2	
	Quiz		4	1	
	Lab Quiz		4	1	
	Midterm Exam		10	1	
	Lab Midterm Exam		15	1	
	Final Exam		20	1	
	Lab Final Exam		20	1	
	Total		100		

Specific learning outcome:	Forms of teaching is on two phase ✓ In the beginning give the students theory lecture by using data show and White Board. Direct the students to labs in order to apply the commands and what they took in the theory on computer supervising by the teacher itself with his assistant.
Course References:	Required Textbook: Computer Networking: CCNA 200-301 Official Cert Guide, Volume 1, WENDELL ODOM, CCIE No. 1624 Emeritus (ISBN: 9780135792735).

Course topics (Theory)	Week	Learning Outcome
CCNA 200-301 Introduction to TCP IP Networking	1&2	• Perspective on Networking • TCP/IP Networking Model • Data Encapsulation Terminology
CCNA 200-301 Fundamentals of Ethernet Lans	1&2	• An Overview of LANs • Building Physical Ethernet LANSs with UTP • Building Physical Ethernet LANs with

		Fiber • Sending Data in Ethernet Networks
CCNA 200-301 Configuring Basic Switch Management	1&2	• Securing the Switch CLI • Enabling IP for Remote Access • Miscellaneous Settings Useful in Lab
CCNA 200-301 Implementing Ethernet Virtual LANs	1&2	• Virtual LAN Concepts • VLAN and VLAN Trunking Configuration and Verification • Troubleshooting VLANs and VLAN Trunk
CCNA 200-301 Spanning Tree Protocol Concepts	1&2	• STP and RSTP Basics • Rapid STP Concepts • Details Specific to STP (and Not RSTP)
CCNA 200-301 Perspectives on IPv4 Subnetting	1&2	• Analyze Requirements • Make Design Choices
CCNA 200-301 Analyzing Classful IPv4 Networks	1&2	• Classful Network Concepts
CCNA 200-301 Analyzing Subnet Masks	1&2	The math converts masks between the three different formats used to represent a mask: • Binary • Dotted-decimal notation (DDN) • Prefix (also called

		classless interdomain routing [CIDR])
CCNA 200-301, Analyzing Existing Subnets		• Defining a Subnet • Analyzing Existing Subnets: Binary • Analyzing Existing Subnets: Decimal
Practical Topics	**Week**	**Learning Outcome**
ACL Practice Lab 1 - Standard ACLs,Address Resolution Protocol,Advanced Extended Access Lists,Advanced Router Configuration ,Basic Network Services I,Basic Router Configuration,Basic Show Commands,Command Line Basics,Cisco Discovery Protocol on a Router,Configuring DNS I,Configuring Network Address Translation I,Configuring NTP Authentication, Configuring Router Interfaces,Configuring SSH,Configuring Trunking,Configuring VLANs,Configuring VTP Client Mode on Switches,Creating a Host Table,Default Routes,Deleting VLANs,DHCP,Enhancing Switch Security I,EtherChannel Negotiation Protocols: LACP,Expanding Switched Networks,Extended Access Lists,Extended ACL Practice Lab 1,Initial Switch Configuration,InterVLAN Routing I,IP Access Lists,NAT Pool,Numbered Access Lists,Router Basics I,Switch and Workstation Configuration,Switch Remote Access via Telnet,Telnet I,Testing Connectivity with Traceroute,Trivial File Transfer Protocol,Troubleshooting a Network Topology,Troubleshooting Access Lists	1-12	

Questions Example Design

Compositional:

1. Multi choices
2. Network Design

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Solution:

Diagram

Extra notes:

External Evaluator

I confirm that the syllabus given the attached course book is sufficient and covers the required areas needed for the students.

Signature

Dr. Salar

17/09/2023