

FACULTY OF COMPUTER APPLICATIONS

Programme	B.Sc. IT (Infrastructure Management Services) (Hons.)					Branch/Spec.	Computer Applications		
Semester	IV					Version	1.0.0.0		
Effective from Academic Year				2025-26		Effective for the batch Admitted in		June 2024	
Subject Code	U44A1FER		Subject Name			Fundamentals Enterprise Routing			
Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	0	2	0	4	Theory	50	50	100
Hours	2	0	4	0	6				

Objective:

The objective is to gain the knowledge and skills required to efficiently configure, manage, and troubleshoot network routing and switching to ensure seamless communication and connectivity in modern IT environments.

Pre-requisites:

Basic understanding of computer networking concepts, including IP addressing, subnetting, and OSI model fundamentals.

Course Outcomes :

Name of CO	Description
CO1	Gain proficiency in routing fundamentals, including distance vector, link state, and hybrid protocols; configuring and managing RIPv2 and EIGRP with metrics, authentication, summarization, and table operations for efficient network routing.
CO2	Upon completing this course, students will be able to design, configure, and troubleshoot OSPF, BGP, and route redistribution.
CO3	Upon completing this course, students will be able to configure and manage essential IP services
CO4	Upon completing this course, students will understand security fundamentals and automation concepts, including AAA, threats, and network programming tools.

Mapping of CO and PO

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	2	1	1	1	3	1	2	1	2	3
CO2	2	2	2	1	1	1	3	1	2	1	2	3
CO3	3	1	3	1	1	1	3	1	2	1	2	3
CO4	3	3	3	1	1	1	3	1	2	1	2	3

Theory Syllabus

Unit	Content	Hrs.
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1	Fundamentals of Routing Distance Vector Routing Protocol, Link State Routing Protocol, Hybrid Routing Protocol, Routing Table, Neighbor Table, Topology Table, RIPv2, Configuration of RIPv2, EIGRP Configuration, EIGRP Packet Types, Metrics, Authentication, Summarization	7
2	OSPF, BGP, Redistribution Basics of OSPF, OSPF Neighbors, OSPF Network Types, OSPF Hierarchy, Router ID, DR, BDR, DROTHER, OSPF Configuration, LSA, OSPFv2, Fundamentals of BGP, BGP Peers, BGP Peers Messages, BGP Attributes, Redistribution	8
3	IP Services Role of DNS and DHCP, NAT, NTP, SNMP, Forwarding PHB, Remote Access using SSH, TFTP/FTP in the network	6
4	Security Fundamentals and Automation Fundamentals Concepts of Authentication -Authorization-Accounting, Security Protocols, Threats, Vulnerabilities, Exploits, Mitigation Techniques, Security Program Elements, Security Policy Elements, Layer 2 security features, Impact of Automation in Network Management, Controller-Based Networking, AI and ML for Network Operation, REST-based APIs, Ansible, Terraform, Components of JSON-encoded data	9
Text Books:		
1	CCNA 200-301 Official Cert Guide, Volume 1, 2nd Edition By Wendell Odom, Cisco Press	
2	CCNA Routing and Switching Complete Study Guide 2nd Edition, By Todd Lammle, SYBEX	
Reference Books:		
1	Implementing and Administering Cisco Solutions: 200-301 CCNA Exam Guide: Begin a successful career in networking with CCNA 200-301 certification By Glen D. Singh, Packt Publishing	
Web References / MOOC / Certification Course:		
1	CCNA Certification, Exam 200-301	
2	New CCNA v1.1 Updates: Preparing for the 2024 CCNA v1.1 (200-301) Exam By cbt nuggets	
Question Paper Scheme:		
	University Examination Duration: 1 Hour Paper Structure: Q-1 Must be from Unit 1 & 2: Any One out of Two (05 Marks) (CO1, CO2) Q-2 Must be from Unit 1: Any One out of Two (05 Marks) CO1 Q-3 Must be from Unit 2: Any One out of Two (05 Marks) CO2 Q-4 Must be from Unit 3: Any One out of Two (05 Marks) CO3 Q-5 Must be from Unit 4: Any One out of Two (05 Marks) CO4	