BACHELOR OF TECHNOLOGY IN CT AND IT

Code & Name	**ECSI 3205 & ECII 3205: NETWORK ADMINISTRATION AND SECURITY**
Prerequisite	Unit Code: ECSI 1204 : Computer Networking Technology
Class	SCCI/2019 & SCII/2019
Lecturer	Elizabeth
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Purpose of the Course
This course will equip the learners with skills on how to implement robust network designs, secure and administer them well

Expected Learning Outcomes
At the end of this unit learners will be able to design network security and management strategies and implement using either a Windows Server / Linux environment

Course Description
Introduction: Internet protocol standards, Protocol functions, the protocol stack (OSI Model), switching and routing.
IP Addressing: Internet IP addresses structure, Classes of IP addresses, Dynamic and Static IP Addressing, Sub netting, IPv4. **Windows Operating Systems**: OS overview - Windows networking architecture, Software components, File systems, Windows Networking services ; Network Services :Internet Information Services, Web Servers, File and storage Servers, Network Printing, Connection to the internet. **Windows Server Roles**: DNS, Hyper- V, DHCP, Active Directory Services (Domain Controller and Group Policy Management), File Servers, Remote Access, Application Servers, Print Servers. **Network Security**: Network Security and management strategies, Physical Security Mechanisms, Authentication, Authorization, Auditing, IPsec, Encryption, Access Control Lists, and Firewalls. **Network Administration**: Windows networking and administration, Virtualization, Trouble shooting tools and translation of network diagrams, Backing up, Maintaining a network, Configuration of network devices (Names and Passwords, remote access, Sharing network resources, Managing Users (creating, Assigning rights and permissions), Based on Principle of least privilege, Monitoring Logs. **Practical Session**: Setting up and configuring a domain controller, Group Policy Management, Roaming Profiles, Configuring network devices, Sharing Network resources, Virtualization, IP addressing and configuring a DHCP Server, Backups and monitoring system logs

Course Outline

WEEK	TOPIC	OUTLINE
WK1	Introduction	Internet protocol standards, Protocol functions, the protocol stack (OSI Model), switching and routing protocols
WK 2 & 3	IP Addressing	Internet IP addresses structure, Classes of IP addresses, Dynamic and Static IP Addressing, Sub netting
WK 4	Windows Operating Systems	OS overview - Windows networking architecture, Software components, File systems, Windows Networking services ; Network Services :Internet Information Services, Web Servers, File and storage Servers, Network Printing, Connection to the internet.

WK 5	Windows Server Roles	DNS, DHCP, Active Directory Services (Domain Controller and Group Policy Management), File Servers, Remote Access, Application Servers, Hyper- V, Print Servers
WK 6	Network Security	Network Security and management strategies, Physical Security Mechanisms, Authentication, Authorization, Auditing, IPsec, Encryption, Access Control Lists, and Firewalls
WK 7	**CAT 1**	
WK 8 & 9	Network Administration	Windows networking and administration, Virtualization, Trouble shooting tools and translation of network diagrams, Backing up, Maintaining a network, Configuration of network devices (Names and Passwords, remote access, Sharing network resources, Managing Users (creating, Assigning rights and permissions), Based on Principle of least privilege, Monitoring Logs
WK10 & 11	Practical Session	Setting up and configuring a domain controller based on Windows Server 2012/2016/2019/2022, IP addressing and configuring a DHCP Server, Group Policy Management, Roaming Profiles, Configuring Network devices and Sharing Network Resources, Virtualization using Hyper-V, Backups and monitoring system logs
WK12	**CAT 2**	
WK13	Assignment Submission and **REVISION**	

Mode of Delivery
Lectures, tutorial sessions, individual and group assignments, exercises

Learning Resources
Books, Computers, projectors, Internet, Journals, Software Whiteboard and Markers

Course Assessment

1. Course work (Practical's, Assignments, CATs)   30%
2. Final Exam   70%

Course Textbooks

1. TCP/IP *Network Administration* (3rd Edition; O'Reilly Networking)
2. *Mastering Windows Server 2012 R2*, by Mark Minasi, et al. Sybex, 2013
3. *The Practice of System and Network Administration*, 2nd Edition, by Thomas A. Limoncelli, Christina J. Hogan and Strata R. Chalup

Course Journals

1. Computer Networks - Journal - Elsevier
2. IEEE Xplore: Journal of Communications and Networks
3. Network Security - ScienceDirect.com

Reference Textbooks

1. Computer Network Security Book by Joseph Migga Kizza
2. *The Practice of Network Security Monitoring*: *Understanding Incident Detection and Response* (8601400885697): Richard Bejtlich:
3. Network Analysis, Architecture, and Design, Third Edition (The Morgan Kaufmann Series in Networking) 3rd Edition by James D. McCabe

Reference Journals

1. Journal of Computer Science and Technology – *Springer*
2. Network Security - Journal – Elsevier
3. Journals of Design Principles & Practices Research Network

Approved by: _____ Signature: _____ Date: _____