ITE413	Network Administration	L	T	P	C
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Prerequisite	ITE323				
Objectives	• To cover various aspects of networks system administration such as plan and design of an efficient community of computers, tools and systems for monitoring and managing network systems.				
Outcomes	• The students would be able to understand and use various principles and practices of managing and administering networked systems.				
Unit I	**INTRODUCTION** Introduction, System Components, Networked Communities, Host Management, User Management				
Unit II	**MODELS OF NETWORK & SYSTEM ADMINISTRATION** Configuration and Maintenance, Diagnostics, Fault & Change Management. SNMP Overview, Installing, Using & Maintaining SNMP Tools				
Unit III	**SERVICES** Application Level Services, Network Level Services, Principles of Security, Security Implications, Analytical System Administration				
Unit IV	**OPEN SOURCE TOOTS FOR NETWORK ADMINISTRATION** Open Source and Network Administration, Open Source Tools, Environment & Background, Terminology & Conventions, Overview of Service Monitoring, Installing, Using, Configuring & Maintaining Sysmon				
Unit V	**NETWORK MANAGEMENT** Overview of Open Source Tools for Network Administration – MRTG**,** Neo, NetFlow, Oak, Tcpdump; Over view of Basic TCP/IP tools - Ping, Telnet, Netcat, Traceroute, MTR, Netstat; Over view of Custom Tools - Basics of Scripting, Bourne Shell, Programming Monitors, Running Programs from Cron.				
Text Books	1. Mark Burgess, "Principles of Network and System Administration", John Wiley & Sons, 2004 2. Mani Subramanian, "Network Management – Principles & Practice", Pearson Education, 2003. 3. Behrouz A Forouzan, Data Communications and Networking, Tata Mc-grawhill, 2007. 4. J.Walrand and P.Varaiya, High Performance Communication Networks, Harcourt Asia (Morgan Kaufmann), 2000. 5. J.F.Kurose and K.W.Ross, Computer Networking: A Top-Down Approach Featuring the Internet, Pearson Education, 2001.				
Reference Books					
MoE	Written examinations, seminar, assignments, surprise tests and quizzes.				
Recommended by the Board of Studies on					
Date of Approval by the Academic Council					

<table>
<tr><td>~~ITE414~~</td><td>Network Administration Lab</td><td>L
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<tr><td>Prerequisite</td><td colspan="5">ITE413</td></tr>
<tr><td>Objectives</td><td colspan="5">•</td></tr>
<tr><td>Outcomes</td><td colspan="5"></td></tr>
<tr><td>Exercises</td><td colspan="5">1. SNMP- Simple Network Management Protocol Tools
▪ Query a variable and view the response
▪ Set a variable and determine if it was successful
▪ Query entire tables with get-next-request
▪ Receive traps

2. MRTG - Multi Router Traffic Grapher
▪ View the traffic patterns of one or more networks at once
▪ Determine if one or more is experiencing an abnormal traffic load.
▪ View history of the network available and look for sudden changes that might account for a problem.
▪ Understand how traffic is distributed across the network, suggest plan capacity needs for the future

3. Neo - Bandwidth Monitoring Tool
▪ Check bandwidth usage or determine on which switch port a particular host resides
▪ Use remote login session and check bandwidth
▪ Find the host and disable its network

4. NetFlow - Flow Monitoring Tool
▪ Receive flows, send to stdout
▪ Receive flows, store to disk
▪ Print flow data to the screen
▪ Produce flow reports for other programs
▪ Print flow statistics to the screen
▪ Detect suspicious network traffic
▪ Send flow data in NetFlow format
▪ Generate test flow data
▪ Import/Export data from/to other NetFlow tools

5. Oak - Message Log Management Tool
▪ Examines a message log in syslog format
▪ Set up to ignore unimportant messages
▪ Condense redundant information
▪ Produce reports of important messages
▪ Notify operators immediately of critical messages

6. Packet level debugging using
▪ Tcpdump
▪ Ping
▪ Telnet
▪ Netcat,
▪ Traceroute
▪ MTR</td></tr>
<tr><td>MoE</td><td colspan="5">CAT, Coding Practice, Observation Book, On-the-spot Exercises, and TEE</td></tr>
<tr><td>Recommended by the Board of Studies on</td><td colspan="5"></td></tr>
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