**AIR FORCE INSTITUTE OF TECHNOLOGY**

**FACULTY OF COMPUTING**

**DEPARTMENT OF CYBER SECURITY**

**COURSE CONTENT FOR TUTORIAL CLASSES**

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| **Module 1 – Understanding Linux Concepts**   What is Linux?   Everyday use of Linux   Unix vs. Linux   Homework | **Module 2 – Download, Install and Configure**   What is Oracle Virtual Box?   Downloading and Installing Oracle Virtual Box   Creating virtual machine   Linux Distributions   Different way to install Linux   Downloading and Installing Linux (CentOS)   Redhat Linux installation (Optional)   Linux Desktop (GUI)   Virtual Machine Management   Linux vs. Windows   Who Uses Linux?   Homework |
| **Module 3 – System Access and File System**   Accessing Linux system   Download and install Putty   New Network Commands (ifconfig and ip)   Connect Linux VM via Putty   Important Things to Remember in Linux   Introduction to File System   File system structure description   File system navigation commands   File System Paths   Directory listing overview   Creating Files and Directories   Linux File Types   Finding Files and Directories (find, locate)   Difference between find and locate command   Changing Password   Wildcard (\*, $, ^)   Soft and Hard Links (ln)   How to open image file through GUI   Homework | **Module 4 – Linux Fundamentals**   Commands Syntax   File Permissions *(chmod)*   File Ownership *(chown, chgrp)*   Getting Help *(man, whatis etc.)*   TAB completion and up arrow keys   Adding text to file   Standard output to a file (tee command)   Pipes *( | )*   File Maintenance Commands   File Display Commands   Filters / Text Processing Commands *(cut, sort, grep, awk, uniq, wc)*   Compare Files *(diff, cmp)*   Compress and un-compress files/directories *(tar, gzip, gunzip)*   Truncate file size (truncate)   Combining and Splitting Files *(cat and split)*   Linux vs. Windows Commands   Homework |
| **Module 5 – Linux System Administration**   Linux File Editors *(vi text editor)*   “sed” command   User account management   Switch users and Sudo access   Monitor users   Talking to users *(users, wall, write)*   Linux Directory Service - Account Authentication   System utility commands *(date, uptime, hostname, which, cal, bc etc.)*   Processes and schedules *(systemctl, ps, top, kill, crontab and at)*   System Monitoring Commands *(top, df, dmesg, iostat 1, netstat, free etc.)*   OS Maintenance Commands *(shutdown, reboot, halt, init etc.)*   System logs monitor *(/var/log)*   Changing System Hostname *(hostnamectl)*   Finding System Information *(uname, cat /etc/redhat-release, cat /etc/\*rel\*, dmidecode)*   System Architecture *(arch)*   Terminal control keys   Terminal Commands *(clear, exit, script)*   Recover root Password *(single user mode)*   SOS Report   Environment variables   Homework | **Module 6 – Networking, Servers and System Updates**   Enabling internet in Linux VM   Network Components   Network files and commands *(ping, ifconfig, netstat, tcpdump, networking config files)*   NIC Information *(ethtool)*   NIC or port bonding   Download files with URLs *(wget)*   curl and ping commands   File transfer commands *(ftp, scp etc.)*   System updates and repositories *(rpm and yum)*   System Upgrade/Patch Management   Create Local Repository from CD/DVD   Advance Package Management   Rollback Patches and Updates   SSH and Telnet   DNS   Hostname and IP Lookup *(nslookup and dig)*   NTP   chronyd   Sendmail   Apache Web Server *(http)*   Central Logger *(rsyslogd)*   Securing Linux Machine (OS Hardening)   OpenLDAP Installation   Tracing Network Traffic (traceroute)   Homework |