### CIT 4314: System and Network Administration

**Contact Hours:** 45 hours

**Prerequisites:** CIT 4307 Data Communication

**Purpose:** To provide an understanding of concepts and principles of computer system administrative tools and setups.

**Expected Learning Outcomes**

Students who successfully complete this unit of study will be able to:

1. Install, manage and maintain both server based and client based operating systems.
2. Perform user and domain resource management.
3. Monitor and tune system performance.
4. Implement secure computer systems.
5. Provide intranet/internet connectivity.

**Course Content**

Network analysis. The basics of clients and servers. Operating System installation. Administering Accounts and Resources. Managing User and Computer Accounts. Managing Groups, Managing Access to Resources. Configuration management: Configuring TCP/IP Addressing and Name Resolution. Principles of security. Firewalls and TCP/IP Security. The development of the Local Area Network from scratch.

**Mode of Delivery**

Lectures, tutorials, practicals.

**Instructional Materials /Equipment**

A computer infrastructure workshop, networking equipment, laboratory manuals, server based operating system, network diagnosis and analysis software, overhead presentation equipment.

**Assessment**

Type Weighting (%)

Examination 70%

Continuous Assessment 30%

Total 100%

**Core Text Books**

1. Limoncelli, T., Hogan, C. J., & Chalup, S. R. (2017). *The Practice of System and Network Administration: Volume 1* (3rd ed.). Boston, MA: Addison-Wesley. ISBN: 0321919165.
2. Hester, M., & Henley, C. (2013). *Microsoft Windows Server 2012 Administration: Instant Reference* (1st ed.). Hoboken, NJ: John Wiley & Sons. ISBN: 1118561880.
3. Ward, B. (2015). *How Linux Works: What Every Superuser Should Know* (2nd ed.). San Francisco, CA: No Starch Press. ISBN: 1593275676.

**Core Journals**

1. *Journal of Network and Computer Applications. ISSN: 1084-8045.*
2. *International Journal of Advanced Networking and Applications. ISSN: 0975-0290.*
3. *Journal of Network and Systems Management. ISSN:1064-7570.*

**Recommended Textbooks**

1. McNab, C. (2017). *Network Security Assessment: Know Your Network* (3rd ed.). Sebastopol, CA: O'Reilly Media, Inc. ISBN: 149191095X.
2. Krause, J. (2016). *Mastering Windows Server 2016: A Comprehensive and Practical Guide to Windows Server 2016*. Birmingham, UK: Packt Publishing Limited. ISBN: 1785888900.
3. Mallett, A. (2015). *Mastering Linux Shell scripting: Master the Complexities of Bash Shell Scripting and Unlock the Power of Shell for your Enterprise*. Birmingham, UK: Packt Publishing. ISBN: 1784396974 9781784396978.

**Recommended Journals**

1. *Networking Science. ISSN: 2076-0310.*
2. *International Journal of Network Management. ISSN: 1099-1190.*
3. *Peer-to-Peer Networking and Applications. ISSN: 1936-6442.*

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| Week | Content Covered |
| 1 | Reporting |
| 2 | Course outline and general introduction to CIT 4314 |
| 3 | **Foundation for System Administration**   * Introduction to System and Network Administration * Definition: Network Administration, Network Administrator, System Administration, System Administrator * Duties of a System Administrator * Network Administrator versus System Administrator * Education and Certifications for Network Administrators * Education and Certifications for System Administrators |
| 4 | Network Analysis   * Network Analysis and Sniffing * Components of network analyzer * Who Uses Network Analysis * How Network Analysis Works * Detecting Sniffers * Protecting Against Sniffers * Network Analysis and Policy |
| 5 | **The basics of Client-Server**   * Client-Server Architecture * Examining a “Peer-to-Peer” Relationship * The Client-Server Relationship * Client-Server Application Configurations and Components * Client-Server Distribution Services * How Do I Recognize a Client-Server Relationship  Advantages of Client-Server ComputingDisadvantages of Client-Server Computing  * Classes of Client-Server Applications |
| 6 | **Network Operating System Installation**   * Preparing for Installation * Windows 2003/8/12 Pre-Installation Checklist * Configuring Disk Partitions * Assign an Administrator account password * Choose service components for Windows 2003 Server products * Convert a Windows 2003 Server to a Domain Controller * Choosing Good Passwords |
| 7 | **CAT 1** |
| 8 | **Administering Accounts and Resources (Theory)**  - Describe the Windows Server 2012/2003 environment.  - Log on to a computer running Windows Server 2012/2003  - Install and configure the administrative tools.  - Create an organizational unit.  - Move objects within a domain |
| 9 | **Managing User and Computer Accounts**  - Create user accounts.  - Create computer accounts.  - Modify user and computer account properties.  - Create a user account template.  - Enable and unlock user and computer accounts.  - Reset user and computer accounts.  - Locate user and computer accounts in the Active Directory® directory service. |
| 10 | **Managing Groups**  - Create groups.  - Manage group membership.  - Apply strategies for using groups.  - Modify groups.  - Manage default groups. |
| 11 | **Managing Access to Resources**  - Manage access to resources.  - Manage access to shared folders.  - Manage access to files and folders by using NTFS permissions.  - Determine effective permissions.  - Managing access to shared files by using offline caching. |
| 12 | **Managing Access to Resources**  After completing this module, you will be able to:  - Manage access to resources.  - Manage access to shared folders.  - Manage access to files and folders by using NTFS permissions.  - Determine effective permissions.  - Managing access to shared files by using offline caching. |
| 13 | **Configuration Management and Supporting TCP/IP**   * Configuration Management * Manage Configurations * Introduction to TCP/IP * Network Communication * TCP/IP Communication * Destination Computer * Examining Classful IP Addressing |
| 14 | Principles of Security |
| 15 | Examinations |
| 16 |