

CYBR 2600: SYSTEM ADMINISTRATION

History

1. Mar 20, 2021 by ghoff
2. Jan 15, 2022 by ghoff

Viewing: CYBR 2600 : SYSTEM ADMINISTRATION

Last approved: Sat, 15 Jan 2022 09:34:55 GMT

Last edit: Fri, 10 Dec 2021 21:44:32 GMT

Contact(s)

Name	E-mail	Phone
William Mahoney	wmahoney@unomaha.edu	402-554-3975

Curriculum

CYBR - Cybersecurity

Course Number

2600

Effective Term

Spring 2022

Are you proposing a cross-listed course?

No

Are you proposing a dual-listed course?

No

Title

SYSTEM ADMINISTRATION

Short title

SYSTEM ADMINISTRATION

Is this a special topics course?

No

Description of change

Previously the undergraduate degree had two system administration classes: 3350 for Linux and 3370 for Windows. Our plan is to combine these two classes and make a portion of the course content accessible via videos. The students would be expected to do a fair amount of the background on their own. This also will allow us to get the students into the administration classes earlier in the undergraduate program so that the skills are present when they enroll in the more advanced classes.

Course Description

This course covers topics a system administrator would encounter in their profession. The student will learn how a system administrator fulfills various computer management requirements using both Windows and Linux operating systems on both physical and virtual machines. Topics include installation, creating and maintaining file systems, user and group administration, backup and restore processes, network configuration, system services, virtualization, and security administration.

Prerequisites, corequisites, and registration requirements

CIST 1400 or CIST 1600 or Instructor Permission

Credit hours

3

Can course be taken for credit multiple times?

No

Are non-degree graduate students excluded from enrolling?

No

Components

Lecture/Lab (combo)

Grading Basis

Graded

Is this course part of or being proposed for the General Education curriculum?

No

Master Syllabus

Students who complete this course successfully, will be able to:

Student learning outcome	
SLO #1	Students will perform the basic operations involved in the administration of operating systems
SLO #2	Students will demonstrate their proficiency in the use of scripting languages by formulating and developing scripts to automate system administration tasks.
SLO #3	Students will identify and summarize basic security issues of operating systems.
SLO #4	Students will inspect systems for anomalies, and carry out proper updating and patching of the system.
SLO #5	Students will evaluate and perform planning, testing, and implementation of deployed software and hardware.
SLO #6	Students will employ the various interfaces between the hypervisors, VMs, physical and virtual hardware, management tools, networking, storage, and external environments.

List the major topics central to this course**Context and a review of fundamentals**

- Context within cybersecurity
- Motivations
- Legal considerations
- What system administration is all about

Disk structures

- Technology overview
- Master Boot Record
- Partitions – logical and physical
- File system overview
- Resizing partitions
- Motivations for disk partitioning, such as backups

User maintenance

- The files involved in user permissions
- Password maintenance, aging, encryption
- Adding users and their files
- Disabling user accounts due to business or other reasons
- Removing accounts

Backups

- Partition oriented
- File oriented
- Specific backup technologies
- Storage and retrieval

Virtual Machines

- Creation and configuration
- Migrating to/from physical machines

Logging

- System logs for routine maintenance
- System logs for solving common problems
- Logs for security incidents

Scripting tasks

- Variables and scope
- Control structures (if/do/etc.)
- Functions

Current bibliography: Please provide a list of relevant sources connected to the course content. When possible, the bibliography should reflect the most current knowledge in the field. This list will be reviewed by the UNO Libraries subject librarians for collection development purposes to ensure there are appropriate materials to support new curriculum. For specific resources that require institutional subscriptions/licenses such as databases or journals to support the proposed course, please contact your subject librarian directly. It is recommended that you include at least 5 and no more than 10 relevant sources.

Textbooks:

Regan, P. (2017). *Microsoft Official Academic Course: Installation, Storage, and Compute with Windows Server 2016*. John Wiley & Sons, Inc.

Shotts, W., Jr. (2012). *The Linux Command Line*. No Starch Press. <https://sourceforge.net/projects/linuxcommand/files/TLCL/19.01/TLCL-19.01.pdf/download>

Other reading material:

Ayden, N. (2021). *Linux: A Complete Guide to Learn Linux Commands, Linux Operating System and Shell Scripting Step-by-Step*. Crawford Press.

Bertram, A. (2020). *PowerShell for Sysadmins: Workflow Automation Made Easy*. No Starch Press, Inc.

Carpenter, T., (2012). *Microsoft Windows Operating System Essentials*. Sybex Publishing.

Codings, Z. (2021). *Hacking with Kali Linux: A Beginner's Guide to Learn Penetration Testing to Protect Your Family and Business from Cyber Attacks Building a Home Security System for Wireless Network Security*. Self published.

Dean, A. (2018). *Linux Administration Cookbook: Insightful recipes to work with system administration tasks on Linux*. Packt Publishing.

Dauti, B. (2019). *Windows Server 2019 Administration Fundamentals: A Beginner's Guide to Managing and Administering Windows Server Environments* (2nd ed.). Packt Publishing, Limited.

Dunkerley, M., Tumbarello, M. (2020). *Mastering Windows Security and Hardening: Secure and Protect Your Windows Environment from Intruders, Malware Attacks, and Other Cyber Threats*. Packt Publishing, Limited.

Gibson, D. (2011). *Microsoft Windows Security Essentials*. Wiley Publishing.

Growth, D. (2019). *Hacking with Linux: Underground Beginners Tools to Learn the Basics of CyberSecurity and Become a Hacker by Breaking into Every Operating System*. Independently published.

Krause, J. (2019). *Mastering Windows Server 2019: The complete guide for IT professionals to install and manage Windows Server 2019 and deploy new capabilities* (2nd ed.). Packt Publishing.

Learn, M. (2020). *Linux for Hackers: linux system administration guide for basic configuration, network and system diagnostic guide to text manipulation and everything on linux operating system*. Mikcorp Ltd.

McCabe, J., Ralston, W. (2019). *Modernizing the Datacenter with Windows Server and Hybrid Cloud*. Microsoft Press.

Mueller, J. (2010). *Windows Command Line Administration Instant Reference*. Wiley Publishing.

Nemeth, E., Snyder, G., Hein, T., Whaley, B., Mackin, D. (2017). *UNIX and Linux System Administration Handbook* (5th ed.). Addison-Wesley Professional.

Panek, C. (2020). *Windows Server Administration Fundamentals*. Sybex Publishing.

Sharma, H. (2019). *Kali Linux - An Ethical Hacker's Cookbook: Practical recipes that combine strategies, attacks, and tools for advanced penetration testing* (2nd ed.). Packt Publishing.

Singh, G. (2019). *Learn Kali Linux 2019: Perform powerful penetration testing using Kali Linux, Metasploit, Nessus, Nmap, and Wireshark*. Packt Publishing.

Tanner, N. (2019). *Cybersecurity Blue Team Toolkit*. John Wiley & Sons, Inc.

Taylor, D., Perry, B. (2016). *Wicked Cool Shell Scripts* (2nd ed.). No Starch Press.

Thomas, O. (2020). *Windows Server 2019 Inside Out*. Microsoft Press

Troncone, P., Albing, C. (2019). *Cybersecurity Ops with bash: Attack, Defend, and Analyze from the Command Line*. O'Reilly Media.

Wangchuk, T. (2018). *Linux System Administration: A Hands-on Guide*, Independently published.

Key: 8621