CNIT R130: ADMINISTER MICROSOFT WINDOWS DESKTOP OPERATING SYSTEM

Originator
ptrujillo

Co-Contributor(s)

Name(s)
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College
Oxnard College

Discipline (CB01A)
CNIT - Computer Networking/IT

Course Number (CB01B)
R130

Course Title (CB02)
Administer Microsoft Windows Desktop Operating System

Banner/Short Title
Admin MS Windows Desktop OS

Credit Type
Credit

Start Term
Fall 2023

Formerly
ENGT R130

Catalog Course Description
This course prepares students to deploy, configure, and secure the Windows 10 operating system for an enterprise setting. This course also covers virtualizing Windows 10 using Hyper-V and securing apps. Students who successfully complete this course should be prepared for the Microsoft Windows 10 (MD-100) and Managing Modern Desktops (MD-101) certification exams. Completing this course effectively prepares students to earn their Microsoft 365 Certified: Modern Desktop Administrator Associate certification.

Taxonomy of Programs (TOP) Code (CB03)
0708.10 - *Computer Networking

Course Credit Status (CB04)
D (Credit - Degree Applicable)

Course Transfer Status (CB05) (select one only)
B (Transferable to CSU only)

Course Basic Skills Status (CB08)
N - The Course is Not a Basic Skills Course

SAM Priority Code (CB09)
C - Clearly Occupational

Course Cooperative Work Experience Education Status (CB10)
N - Is Not Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)
Y - Credit Course

Educational Assistance Class Instruction (Approved Special Class) (CB13)
N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)
Y - Not Applicable

Course Noncredit Category (CB22)
Y - Credit Course

Funding Agency Category (CB23)
Y - Not Applicable (Funding Not Used)

Course Program Status (CB24)
1 - Program Applicable

General Education Status (CB25)
Y - Not Applicable

Support Course Status (CB26)
N - Course is not a support course

Field trips
May be required

Grading method
(L) Letter Graded

Alternate grading methods
(E) Credit by exam, license, etc.

Does this course require an instructional materials fee?
No

Repeatable for Credit
No

Is this course part of a family?
No

Units and Hours

Carnegie Unit Override
No

In-Class

Lecture
Minimum Contact/In-Class Lecture Hours
43.75
Maximum Contact/In-Class Lecture Hours
43.75

Activity

Laboratory
Minimum Contact/In-Class Laboratory Hours
26.25

Maximum Contact/In-Class Laboratory Hours
26.25

Total in-Class

Total in-Class
Total Minimum Contact/In-Class Hours
70
Total Maximum Contact/In-Class Hours
70

Outside-of-Class

Internship/Cooperative Work Experience

Paid

Unpaid

Total Outside-of-Class

Total Outside-of-Class
Minimum Outside-of-Class Hours
87.5
Maximum Outside-of-Class Hours
87.5

Total Student Learning

Total Student Learning
Total Minimum Student Learning Hours
157.5
Total Maximum Student Learning Hours
157.5

Minimum Units (CB07)
3
Maximum Units (CB06)
3

Advisories on Recommended Preparation
CNIT R101

Entrance Skills

Entrance Skills

It is important that students have a solid understanding of PC hardware, software, networking, and printers to be properly prepared for the CNIT R130 course.

Prerequisite Course Objectives

CNIT R101-List and define the main components of a personal computer.
CNIT R101-Describe the difference between application software and operating system software.
CNIT R101-Summarize the difference between proprietary software and open source software.
CNIT R101-Describe the differing characteristics between a peer-to-peer network and a client/server network.
CNIT R101-Analyze methods to protect a PC and computer network and make recommendations about a security solution for a small network.
CNIT R101-Demonstrate the ability to use a bottom-up, layered approach to troubleshooting the most common PC and computer networking problems.
CNIT R101-Describe the differences between printers used for small office/home office and enterprise networks.
CNIT R101-List and describe the most common wireless security protocols.

Requisite Justification

Requisite Type
Advisory

Requisite
CNIT R101

Requisite Description
Course in a sequence

Level of Scrutiny/Justification
Content review

Student Learning Outcomes (CSLOs)	
	Upon satisfactory completion of the course, students will be able to:
1	Implement a password policy with the Windows 10 Local Security Policy app that that requires complex passwords, minimum password length, maximum password age, and password history enforcement.
2	Capture a reference image of the Windows 10 operating system and deploy it on another host PC.
3	Specify CPU and RAM utilization on a Windows 10 PC using a performance monitoring tool.

Course Objectives	
	Upon satisfactory completion of the course, students will be able to:
1	Install the Microsoft Windows 10 operating system using multiple methods including DVD, USB, and imaging.
2	Create a reference computer, capture a Windows 10 image of the reference computer OS, and deploy the image to other computers.
3	Administer permissions on volumes, files, folders, and printers to control access to resources.
4	Setup and configure a network-based printer for a Windows network.
5	Configure and manage hardware devices and drivers.
6	Harden the Windows 10 operating system using Microsoft Defender Antivirus and the built-in Microsoft Defender Firewall.
7	Troubleshoot issues related to the proper functioning of the Windows 10 operating system
8	Update the Windows operating system, applications, and drivers to ensure security and a stable operating system.
9	Encrypt a partition with Microsoft BitLocker technology to protect the confidentiality of data.
10	Network Windows 10 devices together to form a LAN using IPv4 and IPv6 addressing while protecting the confidentiality of data traveling across the network.
11	Create a Windows 10 virtual machine (VM) with specific resource settings using the Hyper-V app.

Course Content

Lecture/Course Content
1. Windows Installation
   a. Windows Versions
   b. Windows Installation
   c. Windows Activation
   d. Windows Post-Installation Configuration
   e. Web Browser Configuration
   f. Windows Upgrade
   g. User Profile and Data Migration
   h. Windows Deployment
2. System Imaging

      a. System Images
      b. Image Servicing
      c. Provisioning Packages
      d. Sideloaded Apps
3. Windows Device and user Management
      a. Device and User Management
          i. Windows Operating System Roles
          ii. Using Local User Accounts for Sign-in
          iii. Joining a Workgroup
          iv. Using Online User Accounts for Sign-in
          v. Using Domain User Accounts for Sign-in
          vi. Using Azure AD User Accounts for Sign-in
      b. Active Directory
          i. Joining a Domain
          ii. Managing Active Directory Objects
          iii. Organizational Units
          iv. Group Policy
4. Hardware Management
      a. Devices and Drivers
      b. Device Driver Troubleshooting
      c. Display Management
      d. OneDrive Storage
5. Network Configuration
      a. IPv4
      b. IPv6
      c. IP Configuration
      d. IP Troubleshooting
      e. Wireless Networking Overview
      f. Wireless Networking Configuration
6. Application Management
      a. Desktop Applications
      b. User Account Control (UAC)
      c. Windows Store Apps
      d. Cloud-based Applications
7. System Access
      a. Authentication and Authorization
      b. Authentication Management
      c. User Rights and Account Policies
      d. Credential Management
      e. Alternative Authentication Options
      f. NTFS Permissions
      g. Auditing
      h. Dynamic Access Control (DAC)
      i. Encryption
8. Resource Sharing
      a. Resource Sharing
      b. Shared Resource Troubleshooting
      c. Printer Management and Sharing
9. Mobile Computing
      a. Co-Management
      b. Mobile Device Management - Intune Enrollment
      c. Mobile Device Management - Intune Policies and Profiles
      d. Virtual Private Network (VPN)
      e. BitLocker
      f. Mobile Device Security
      g. Power Management
      h. Mobility Options
      i. Mobile Networking

      j. Mobile Apps
      k. Mobile Application Management with Intune
10. System Monitoring and Resource Management
      a. System Configuration Tools
      b. System Events
      c. Performance Management
      d. Resource Monitoring
      e. Reliability and Performance Maintenance
      f. Windows Optimization
      g. Remote Management
      h. Remote Desktop and Remote Assistance
      i. System Troubleshooting Tools
11. System Protection
      a. Windows Updates
      b. Advanced Windows Updates
      c. System Restore
      d. Backup
      e. Recovery
      f. Recovery Environment
12. Windows Defender
      a. Malware Protection
      b. Windows Security
      c. Windows Defender Credential Guard
      d. Windows Defender Exploit Guard
      e. Windows Defender Advanced Threat Protection
      f. Windows Defender Application Control
      g. Windows Defender Application Guard
      h. Windows Defender Firewall
      i. Windows Defender Firewall with Advanced Security
13. Hyper-V
      a. Virtual Machines
      b. Virtual Hard Drive
      c. Virtual Switch
      d. Virtual Networking
      e. Checkpoints
      f. Native Boot

Laboratory or Activity Content
1. Installing Microsoft Windows 10 OS
      a. Perform pre-installation tasks
      b. Install Windows 10 from DVD media
      c. Install Windows 10 from USB flash drive
      d. Install Windows 10 on VHD
      e. Create installation media using Microsoft Media Creation tool
2. Imaging
      a. Create a Windows 10 image from reference PC using Microsoft Assessment and Deployment Kit (ADK)
      b. Utilize install.wim file from installation media to image a PC
      c. Utilize Create an Image tool to capture a backup image
3. Networking with Windows
      a. Create a Windows workgroup
      b. Share folders and configure permissions
      c. Use Windows Firewall to configure secure access for public and private networks
4. Data Security
      a. Configure NTFS file and folder permissions
      b. Configure EFS encryption on files and folders
      c. Enable BitLocker on hard drive to encrypt contents
      d. Configure Windows advanced firewall
5. Windows Hyper-V Virtualization

      a. Configure VHD
      b. Boot Windows 10 off VHD drive
      c. Create virtual machine using Hyper-V
      d. Create virtual switch using Hyper-V
6. System Monitoring and Resource Management
      a. Utilize the Resource Monitor app to build a baseline of resource utilization on a host PC.
      b. Use Task Manager to customize apps that will launch at startup
      c. Determine the stability of a Windows 10 host PC by interpreting the data recorded in the Stability Index App.
      d. Configure Performance Monitor with a customized Data Collector Set to monitor specific performance settings from multiple PCs on the LAN.

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Written expression
Problem solving exercises
Skills demonstrations

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Computational homework
Group projects
Individual projects
Laboratory activities
Laboratory reports
Objective exams
Oral presentations
Quizzes
Reports/papers
Skills demonstrations
Skills tests or practical examinations
Essays
Projects
Problem-Solving Assignments

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Audio-visual presentations
Class activities
Class discussions
Collaborative group work
Computer-aided presentations
Demonstrations
Distance Education
Group discussions
Guest speakers
Instructor-guided use of technology
Internet research
Laboratory activities
Lecture
Small group activities

Describe specific examples of the methods the instructor will use:

1. Instructor will use publisher-provided PowerPoints to lecture on Microsoft Windows 10 course topics.
2. The instructor will introduce Windows 10 lab activities and demonstrate lab solutions when appropriate.
3. Small group research of current security threats to the Windows 10 operating system and best practices to defend against specific threats. Students will report out to the class on their findings.
4. The instructor may illustrate to the class new features of the Windows 10 operating system that are so new that they are not covered in the curriculum at the time it was published.

Representative Course Assignments

Writing Assignments

1. Students are required to answer reflection questions at the end of their lab activities to demonstrate that they grasp the key concepts in the lab. An example would be configuring the Windows 10 Defender Firewall a particular way to enhance security and then justifying the configuration with a written explanation.
2. Exam and/or quiz questions may require writing a summary such as explaining all of the steps that should be taken prior to performing an in-place upgrade to Windows 10 from a previous Windows OS to ensure pertinent data and settings are preserved.

Critical Thinking Assignments

1. Evaluation of a cybersecurity vulnerability for Windows 10 and specific written recommendations to mitigate the risk.
2. Students will evaluate the technology needs of a fictitious company and determine a solution that best meets the needs of the customer. For example, a company is using the Windows 8 operating system and they would like to upgrade to Windows 10 but they need a specific recommendation on which version they should upgrade and the true cost of upgrading to Windows 10 beyond just the licensing cost of the OS. The student must make recommendations to satisfy the requirements of the customer and justify the decision in a written document.

Reading Assignments

1. Students are required to read and study the information in the assigned chapter of the book in between classes in order to be prepared for the lecture and lab activities. A typical reading assignment would be for the students to read the chapter on folder permissions and file encryption so that they are prepared to perform these lab activities.
2. Students will be required to perform reading from assigned support websites such as http://windowsupdate.microsoft.com and www.sans.org (http://www.sans.org) to research malware that may adversely affect the OS and how to secure the OS.

Skills Demonstrations

1. Students will capture a reference image of a Windows 10 host using the appropriate software and then deploy that image to another PC.
2. Students will cable Windows 10 PCs to a network switch and router to create a functional LAN using an IPv4 and IPv6 addressing scheme they implement on a DHCP server.

Problem-Solving and Other Assignments (if applicable)

1. Students will complete practice questions for the MD-100 and MD-101 Microsoft Certification Exams.

Outside Assignments

Representative Outside Assignments

1. Read the assigned curriculum.
2. Complete labs that are embedded in the TestOut Client Pro courseware.
3. Read Microsoft security blogs at www.microsoft.com and answer discussion questions in the course portal as it relates to Windows 10 security vulnerabilities and how to deal with risk.

Articulation

Comparable Courses within the VCCCD
CNSE M30 - MS Windows Administration

Equivalent Courses at other CCCs

College	Course ID	Course Title	Units
College of the Canyons	CMPNET 176	MCSA:Client OS	3.5

District General Education

A. Natural Sciences

B. Social and Behavioral Sciences

C. Humanities

D. Language and Rationality

E. Health and Physical Education/Kinesiology

F. Ethnic Studies/Gender Studies

CSU GE-Breadth

Area A: English Language Communication and Critical Thinking

Area B: Scientific Inquiry and Quantitative Reasoning

Area C: Arts and Humanities

Area D: Social Sciences

Area E: Lifelong Learning and Self-Development

Area F: Ethnic Studies

CSU Graduation Requirement in U.S. History, Constitution and American Ideals:

IGETC

Area 1: English Communication

Area 2A: Mathematical Concepts & Quantitative Reasoning

Area 3: Arts and Humanities

Area 4: Social and Behavioral Sciences

Area 5: Physical and Biological Sciences

Area 6: Languages Other than English (LOTE)

Textbooks and Lab Manuals
Resource Type
Software

Description
TestOut Client Pro (2020), ISBN: 978-1-935080-45-9

Distance Education Addendum

Definitions

Distance Education Modalities
Hybrid (1%–50% online)
Hybrid (51%–99% online)
100% online

Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.
Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.
Yes

Regular Effective/Substantive Contact

Hybrid (1%–50% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Topics will be presented for discussion with the opportunity to provide commentary and feedback on fellow student responses.
E-mail	Email will be used for individual interaction between professor and student, to send group email reminders of deadlines, to inform of upcoming course content.
Face to Face (by student request; cannot be required)	Part of the course requires face to face time. Also, face to face with individuals will take place to discus specific questions, issues or concerns.
Video Conferencing	Zoom or comparable video conferencing software to lecture on course content, demonstrate lab assignments, answer student questions in real time, and provide student assistance on anything that is course related.

Hybrid (51%–99% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Topics will be presented for discussion with the opportunity to provide commentary and feedback on fellow student responses.
E-mail	Email will be used for individual interaction between professor and student, to send group email reminders of deadlines, to inform of upcoming course content.
Face to Face (by student request; cannot be required)	Part of the course requires face to face time. Also, face to face with individuals will take place to discus specific questions, issues or concerns.
Video Conferencing	Zoom or comparable video conferencing software to lecture on course content, demonstrate lab assignments, answer student questions in real time, and provide student assistance on anything that is course related.

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Topics will be presented for discussion with the opportunity to provide commentary and feedback on fellow student responses.
E-mail	Email will be used for individual interaction between professor and student, to send group email reminders of deadlines, to inform of upcoming course content.
Video Conferencing	Zoom or comparable video conferencing software will be utilized to lecture on course content, demonstrate lab assignments, answer student questions in real time, and provide student assistance on anything that is course related.

Examinations

Hybrid (1%–50% online) Modality
On campus
Online

Hybrid (51%–99% online) Modality
On campus
Online

Primary Minimum Qualification
COMPUTER INFORMATION SYS

Review and Approval Dates

Department Chair
11/16/2022

Dean
11/16/2022

Technical Review
11/23/2022

Curriculum Committee
11/23/2022

Curriculum Committee
12/14/2022

Control Number
CCC000543434

DOE/accreditation approval date
MM/DD/YYYY