

COURSE TITLE AND NUMBER: Designing a Secure Microsoft Windows 2000 Network, IT 220

North Central **Michigan College**

NCMC CURRICULUM/COURSE OUTLINE FOR YEARS 2002 +

DIVISION/AREA: Business and Technology DEPARTMENT: Information Technologies

AREA DEAN: Dr. Timothy Dykstra ORIGINATOR: Fred Harrington

TOTAL HOURS OF INSTRUCTION: LECTURE:0 LAB: 2.5 TOTAL CONTACT HOURS: 2.5

COURSE NUMBER: IT 220 CREDIT HOURS: 2.5

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TRANSFERABLE YES: NO: TO:

PREREQUISITE(S)/COREQUISITE(S)/ADVISORY:

PREREQUISITE: IT 150. A pretest may be taken in lieu of prerequisites with instructor approval.

CATALOG DESCRIPTION: IT 220, DESIGNING A SECURE MICROSOFT WINDOWS 2000 NETWORK
This course teaches you how to design security for a Microsoft Windows 2000 network. You will learn how to assemble a design team and how to analyze current business and technical environments. You will also learn to create security solutions for access between networks, as well as in a heterogeneous network environment, using AppleTalk Network Integration Services, Services for NetWare 5.0, and Services for UNIX 2.0. Finally, you will learn how to create a security implementation plan. The course will help prepare you for the Microsoft Certified Systems Engineer Exam 70-220. Prerequisite, IT 150 or instructor approval.

GENERAL EDUCATION OUTCOMES OR OCCUPATIONAL PROGRAM OUTCOMES

The purpose of General Education requirements in our degree programs is to enable students to develop their ability to reason, to communicate effectively in both oral and written form, and to acquire sufficient knowledge of their heritage to participate fully in society and the world. Upon completion of an associate degree program, a graduate will be able to:

1. Think critically and analytically: The course requires a student analyze a given business environment and design the appropriate security strategy for that configuration.
1. Write and speak effectively: The course requires a student to document completion of each laboratory assignment with a clearly written professionally formatted letter. Prior to taking the final examination each student must pass an oral examination in which students must clearly articulate their understanding of an instructor selected topic.
1. Independently acquire knowledge: The course is an instructor guided self-study program. Instructor guidance is used to help students develop concepts through pre-designed exercises and exploration in

COURSE TITLE AND NUMBER: Designing a Secure Microsoft Windows 2000 Network, IT 220

a controlled environment. Online supplements are provided for both remedial support and in-depth investigations.

1. Select and use mathematical tools for problem solving and decision-making: The course requires a student analyze given mathematical representations of network configurations and design security strategies for in a TCP/IP environment.

COURSE OBJECTIVES & OUTCOMES:

Upon successful completion of this course, with appropriate study, you will be able to:

1. Assemble a design team, assuring the appropriate mix of people, soft skills, and technical knowledge
2. Analyze the current business environment, including the products, customer relationships, business organizational structures, business processes, factors that influence an organization's business strategy, and the information technology (IT) management organization
3. Analyze the current technical environment, including the network architecture, hardware, software, technical standards, Domain Name System (DNS) environment, and any existing Microsoft Windows NT domain architecture
4. Analyze the current security requirements, including the security baseline for the network and the required security for each resource
5. Design a security solution, including an audit policy, the placement and inheritance of security policies, an Encrypting File System (EFS) strategy, and an authentication strategy, which includes certificate-based authentication, Kerberos authentication, clear-text passwords, digest authentication, smart cards, NT LAN Manager (NTLM), Remote Authentication Dial-In User Service (RADIUS), and Secure Socket Layer (SSL) authentication methods
6. Design a PKI, which includes designing CA hierarchies, identifying certificate server roles, managing certificates, integrating with third-party CAs, and mapping certificates
7. Design Windows 2000 network services security, which includes designing Windows 2000 DNS security, Windows RIS security, Windows 2000 Simple Network Management Protocol (SNMP) security, and Windows 2000 Terminal Services security
8. Create a security solution for access between networks, which includes providing secure access to public networks from a private network; providing external users with secure access to private network resources; providing secure access between private networks, including secure access within a LAN, a WAN, and across a public network; and designing security for remote access users
9. Create a security solution for access in a heterogeneous network environment, which includes providing interoperability between Windows 2000 and heterogeneous networks using AppleTalk Network Integration Services, Services for NetWare 5.0, and Services for UNIX 2.0; implementing authentication, directory service synchronization and integration, and Windows 2000 resource access for Macintosh, Novell, and UNIX clients; and securing Windows 2000 user access to heterogeneous networks
10. Create an application-level security plan, which includes implementing server message block (SMB) signing to provide authenticity and integrity of transmitted data and to prevent impersonation
11. Create an Internet Protocol Security (IPSec) security plan, which includes designing an IPSec encryption scheme, implementing an IPSec management strategy, designing IP filters, and defining security levels
12. Create a security implementation plan, which includes defining a security policy; designing the steps required to develop a security plan, including defining the scope, the project team, the security requirements and security baselines, and deploying the project plan; and developing a maintenance strategy

METHODS OF INSTRUCTION: This course will be completed as an instructor directed self-study using laboratory exercises coinciding with assigned readings and online supplemental study aids.

METHODS OF EVALUATION:

Tests (1) = 30%

Quizzes = 30%

Assignments and lab work = 30%

Oral examination = 10%

Grading Scale: A (95), A- (90), B+ (87), B (83), B-(80), C+(77), C (73), C-(70), E-(less than 70)

1. The test will be scheduled with advance notice upon completion of all labs, quizzes, and an oral examination. The test will consist of questions derived from labs, and assigned readings.
2. Quizzes will be given at completion of each chapter lab assignment. Quizzes will consist of questions derived from labs, and assigned readings.
3. Lab exercises will be completed in conjunction with assigned readings. Before leaving the lab, the instructor must view your lab assignments. To ensure you receive credit for the lab you must turn in a lab report written as a letter in the professional format provided by the instructor.
4. An oral examination will be conducted upon completion of all assignments. During the examination the student must demonstrate satisfactory knowledge in an area to be determined by the instructor.

Quizzes, tests, and the oral examination must be passed with a score of 70 or greater. Examinations may be retaken after a waiting period of at least one day. In all reexaminations the highest achievable score will be 70.

REQUIRED TEXTS:

***ALS: Designing Microsoft Windows 2000 Network Security* textbook and *ALS: Designing Microsoft Windows 2000 Network Security Project Manual* (Microsoft Press, 2001)**

SEQUENCE OF INSTRUCTION:

The following is a tentative schedule based on individual student needs. The instructor reserves the right to make any schedule changes deemed necessary and assign online supplemental activities as necessary. The entire sequence must be completed by the end of the calendar semester. Laboratory access is limited to 12 hours per week for this course.

Assignment	Reading Assignments	Project Assignments	Examinations
Assignment 1	Chapter 1, Lesson 1 Chapter 1, Lesson 2 Chapter 1, Lesson 3 Chapter 2, Lesson 1 Chapter 2, Lesson 2 Chapter 2, Lesson 3 Chapter 2, Lesson 4 Chapter 3, Lesson 1	The projects in this manual require that you either use two students and one instructor or that you work in conjunction with another student. If you work with a partner, you are still responsible for completing your project manual and reporting your progress for each project in a professionally formatted letter.	Pretest

COURSE TITLE AND NUMBER: Designing a Secure Microsoft Windows 2000 Network, IT 220

Assignment 2	Chapter 3, Lesson 2 Chapter 3, Lesson 3 Chapter 3, Lesson 4 Chapter 3, Lesson 5	Project 1, 2	
Assignment 3	Chapter 4, Lesson 1 Chapter 4, Lesson 2 Chapter 5, Lesson 1 Chapter 5, Lesson 2 Chapter 6, Lesson 1 Chapter 6, Lesson 2	Project 3, 4	Quiz 1
Assignment 4	Chapter 6, Lesson 3 Chapter 7, Lesson 1	Project 5, 6	
Assignment 5	Chapter 7, Lesson 2 Chapter 8, Lesson 1 Chapter 8, Lesson 2	Project 7, 8	
Assignment 6	Chapter 8, Lesson 3 Chapter 9, Lesson 1 Chapter 9, Lesson 2 Chapter 9, Lesson 3 Chapter 9, Lesson 4	Project 9,10	
Assignment 7	Chapter 9, Lesson 5 Chapter 10, Lesson 1 Chapter 10, Lesson 2	Project 11, 12	
Assignment 8	Chapter 10, Lesson 3	Project 13,14	Quiz 2
Assignment 9	Chapter 11, Lesson 1 Chapter 11, Lesson 2 Chapter 12, Lesson 1	Project 15,16	
Assignment 10	Chapter 12, Lesson 1 Chapter 12, Lesson 2	Project 17, 18	
Assignment 11	Chapter 13, Lesson 1 Chapter 13, Lesson 2 Chapter 13, Lesson 3 Chapter 13, Lesson 4	Project 19, 20	
Assignment 12	Chapter 13, Lesson 5 Chapter 14, Lesson 1 Chapter 14, Lesson 2	Project 21, 22	
Assignment 13	Chapter 14, Lesson 3 Chapter 15, Lesson 1 Chapter 15, Lesson 2 Chapter 15, Lesson 3	Project 23, 24	

COURSE TITLE AND NUMBER: Designing a Secure Microsoft Windows 2000 Network, IT 220

Assignment 14	Chapter 15, Lesson 4 Chapter 16, Lesson 1 Chapter 16, Lesson 2		
Assignment 15	Chapter 16, Lesson 3 Chapter 16, Lesson 4 Chapter 16, Lesson 5 Chapter 17, Lesson 1 Chapter 17, Lesson 2 Chapter 17, Lesson 3		Quiz 3 Oral Examination Final Examination

Reasonable accommodations may be provided for students with documented physical, sensory, cognitive, systemic, and/or psychiatric disabilities. Please contact the Education Opportunity Program (EOP) at (231) 348-6687 to arrange services for this course.

APPROVED FOR ADOPTION BY THE CRD/AP COMMITTEE ON _____