

# **Career and Technical Education Adapted CTE Course Blueprint of Essential Standards**

## **Business, Finance, and Information Technology Education**

### *BN20 Network Administration I*

Public Schools of North Carolina  
State Board of Education • Department of Public Instruction  
Academic Services and Instructional Support  
Division of Career and Technical Education  
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**Summer 2013**

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Special thanks to the following educators who developed this Adapted CTE Course Blueprint.

Deb Ramey – Weaver Academy  
Justin Crompton – The Academy at Central  
Weldon Hinshaw – Guilford County Schools

**This Adapted CTE Course Blueprint has been reviewed by business and industry representatives for technical content and appropriateness for the industry.**

## Adapted CTE Course Blueprint of Essential Standards

Essential standards are big, powerful ideas that are necessary and essential for students to know to be successful in a course. Essential standards identify the appropriate verb and cognitive process intended for the student to accomplish. Essential standards provide value throughout a student's career, in other courses, and translate to the next level of education or world of work.

This document lays out the essential standards for a specific course leading to industry certification. The certifying organization provides Microsoft Technology Associate (MTA) 98-349 Operating Systems Fundamentals, MTA 98-366 Networking Fundamentals, MTA 98-365 Windows Server Administration Fundamentals, and MTA 98-367 Security Fundamentals, which are used to write the essential standards. The essential standards use Revised Bloom's Taxonomy (RBT) category verbs (remember, understand, apply, analyze, evaluate, create) that reflect the overall intended cognitive outcome of the indicators written by the certifying body (Microsoft). Each essential standard and indicator reflects the intended level of learning through two dimensions; The Knowledge Dimension is represented with letters A-C, and the Cognitive Process Dimension by numbers 1-6.

The Adapted CTE Course Blueprint includes units of instruction, essential standard(s) for each unit, and the specific indicators aligned with industry certification. Also included are the relative weights of the units and essential standards within the course. The industry certifications reflected in this document are MTA 98-349 Operating Systems Fundamentals, MTA 98-366 Networking Fundamentals, MTA 98-365 Windows Server Administration Fundamentals, and MTA 98-367 Security Fundamentals.

This document will help teachers plan for curriculum delivery for the course, prepare daily lesson plans, and construct valid formative, benchmark, and summative assessments. Curriculum for this course is not provided by NCDPI. Industry curriculum providers collaborated with the North Carolina Department of Public Instruction (NCDPI) to develop a valid and reliable secure postassessment administered by NCDPI. Assessment for this course is written at the level of the **ESSENTIAL STANDARD** and assesses the intended outcome of the sum of its indicators. The following industry curriculum providers participated in the development of the secure postassessment. Curriculum providers include: Microsoft.

For additional information about this blueprint, contact the Division of Career and Technical Education, North Carolina Department of Public Instruction, 6361 Mail Service Center, Raleigh, North Carolina 27699-6361.

Reference: Anderson, Lorin W. (Ed.), Krathwohl, David R. (Ed.), et al., *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*, Addison Wesley Longman, Inc., New York, 2001.

### Interpretation of Columns on the NCDPI Adapted CTE Course Blueprint

No.	1	2	3	4
Heading	Essential Std #	Unit Titles, Essential Standards, and Indicators	Course Weight	RBT Designation
<b>Column information</b>	Unique course identifier and essential standard number.	Statements of unit titles, essential standards per unit, and specific indicators per essential standard. If applicable, includes % for each indicator.	Shows the relative importance of each unit and essential standard. Course weight is used to help determine the percentage of total class time to be spent on each essential standard.	Classification of outcome behavior in essential standards and indicators in Dimensions according to the Revised Bloom's Taxonomy.  <b>Cognitive Process Dimension:</b> 1 Remember 2 Understand 3 Apply 4 Analyze 5 Evaluate 6 Create  <b>Knowledge Dimension:</b> A Factual Knowledge B Conceptual Knowledge C Procedural Knowledge

*Career and Technical Education conducts all activities and procedures without regard to race, color, creed, national origin, gender, or disability. The responsibility to adhere to safety standards and best professional practices is the duty of the practitioners, teachers, students, and/or others who apply the contents of this document.*

*Career and Technical Student Organizations (CTSO) are an integral part of this curriculum. CTSOs are strategies used to teach course content, develop leadership, citizenship, responsibility, and proficiencies related to workplace needs.*

**Adapted CTE Course Blueprint of Essential Standards for  
BN20 Network Administration I**  
(Recommended hours of instruction: 135 - 180)

Essential Std #	Units, Essential Standards, and Indicators (The Learner will be able to:)	Course Weight	RBT Designation
1	2	3	4
	<b>Total Course Weight</b>	<b>100%</b>	
<b>A</b>	<b>Operating Systems Fundamentals (Microsoft MTA 98-349)</b>	<b>34%</b>	
<b>1.00</b>	<b>Understand operating system configurations.</b>	<b>6%</b>	<b>B2</b>
	1.01 Configure control panel options. 1.02 Configure desktop settings. 1.03 Understand native applications and tools. 1.04 Understand mobility. 1.05 Understand remote management and assistance.		
<b>2.00</b>	<b>Understand procedures to install and upgrade client systems.</b>	<b>6%</b>	<b>B2</b>
	2.01 Identify Windows operating system editions. 2.02 Identify upgrade paths. 2.03 Understand installation types. 2.04 Understand virtualized clients.		
<b>3.00</b>	<b>Apply procedures to manage applications.</b>	<b>7%</b>	<b>C3</b>
	3.01 Understand application installations. 3.02 Understand user account control (UAC). 3.03 Remove malicious software. 3.04 Understand services. 3.05 Understand application virtualization.		
<b>4.00</b>	<b>Understand procedures to manage files and folders.</b>	<b>6%</b>	<b>B2</b>
	4.01 Understand file systems. 4.02 Understand file and print sharing. 4.03 Understand encryption. 4.04 Understand libraries.		
<b>5.00</b>	<b>Apply procedures to manage devices.</b>	<b>5%</b>	<b>C3</b>
	5.01 Connect devices. 5.02 Understand storage. 5.03 Understand printing devices. 5.04 Understand system devices.		
<b>6.00</b>	<b>Understand operating system maintenance.</b>	<b>4%</b>	<b>B2</b>
	6.01 Understand backup and recovery methods. 6.02 Understand maintenance tools. 6.03 Understand updates.		
<b>B</b>	<b>Networking Fundamentals (Microsoft MTA 98-366)</b>	<b>33%</b>	
<b>7.00</b>	<b>Understand network infrastructures.</b>	<b>12%</b>	<b>B2</b>
	7.01 Understand the concepts of the Internet, intranet, and extranet. 7.02 Understand local area networks (LANs). 7.03 Understand wide area networks (WANs). 7.04 Understand wireless networking. 7.05 Understand network topologies and access methods.		
<b>8.00</b>	<b>Understand network hardware.</b>	<b>7%</b>	<b>B2</b>
	8.01 Understand switches. 8.02 Understand routers. 8.03 Understand media types.		
<b>9.00</b>	<b>Understand protocols and services.</b>	<b>14%</b>	<b>B2</b>

Essential Std #	Units, Essential Standards, and Indicators (The Learner will be able to:)	Course Weight	RBT Designation
1	2	3	4
	9.01 Understand the OSI model. 9.02 Understand IPv4. 9.03 Understand IPv6. 9.04 Understand names resolution. 9.05 Understand networking services. 9.06 Understand TCP/IP.		
<b>C</b>	<b>Security Fundamentals (Microsoft MTA 98-367)</b>	<b>33%</b>	
<b>10.00</b>	<b>Understand security layers.</b>	<b>8%</b>	<b>B2</b>
	16.01 Understand core security principles. 16.02 Understand physical security. 16.03 Understand Internet security. 16.04 Understand wireless security.		
<b>11.00</b>	<b>Understand operating system security.</b>	<b>9%</b>	<b>B2</b>
	17.01 Understand user authentication. 17.02 Understand permissions. 17.03 Understand password policies. 17.04 Understand audit policies. 17.05 Understand encryption. 17.06 Understand malware.		
<b>12.00</b>	<b>Understand network security.</b>	<b>8%</b>	<b>B2</b>
	18.01 Understand dedicated firewalls. 18.02 Understand Network Access Protection (NAP). 18.03 Understand network isolation. 18.04 Understand protocol security.		
<b>13.00</b>	<b>Understand security software.</b>	<b>8%</b>	<b>B2</b>
	19.01 Understand client protection. 19.02 Understand e-mail protection. 19.03 Understand server protection.		
<b>D</b>	<b>Windows Server Administration Fundamentals (Microsoft MTA 98-365)</b>	<b>SUPP</b>	<b>SUPP</b>
<b>14.00</b>	<b>Understand server installation.</b>	<b>SUPP</b>	<b>SUPP</b>
	10.01 Understand device drivers and services. 10.02 Understand server installation options.		
<b>15.00</b>	<b>Understand server roles.</b>	<b>SUPP</b>	<b>SUPP</b>
	11.01 Identify applications servers. 11.02 Understand Web services. 11.03 Understand remote access. 11.04 Understand file and print services. 11.05 Understand server virtualization.		
<b>16.00</b>	<b>Understand active directory.</b>	<b>SUPP</b>	<b>SUPP</b>
	12.01 Understand accounts and groups. 12.02 Understand organizational units (OUs) and containers. 12.03 Understand Active Directory infrastructure. 12.04 Understand group policy.		
<b>17.00</b>	<b>Understand storage.</b>	<b>SUPP</b>	<b>SUPP</b>
	13.01 Identify storage technologies. 13.02 Understand RAID. 13.03 Understand disk types.		
<b>18.00</b>	<b>Understand server performance management.</b>	<b>SUPP</b>	<b>SUPP</b>

Essential Std #	Units, Essential Standards, and Indicators (The Learner will be able to:)	Course Weight	RBT Designation
1	2	3	4
	14.01 Identify major server hardware components. 14.02 Understand performance monitoring. 14.03 Understand logs and alerts.		
<b>19.00</b>	<b>Understand server maintenance.</b>	<b>SUPP</b>	<b>SUPP</b>
	15.01 Identify steps in the startup process. 15.02 Understand business continuity. 15.03 Understand updates. 15.04 Understand troubleshooting methodology.		