

**DESE Model Curriculum: Network Administration (CIP Code: 11.0103)**

GRADE LEVEL/UNIT TITLE: 11-12/Networking Concepts

<b>COURSE INTRODUCTION</b>					
<p>A knowledge and understanding of networking concepts prepare students for the career area of network administration. As technology advances, the demand will continue to increase for employees who are able to resolve computer network problems.</p> <p>Students apply problem-solving skills to business situations exploring computer maintenance activities. Students will analyze software problems, install software applications programs and customize defaults, connect components of a local area network, use basic network protocol, and troubleshoot network problems.</p>					
<b>UNIT DESCRIPTION</b>			<b>SUGGESTED UNIT TIMELINE</b>		
Students learn how to diagram and plan a network, considering wireless and wired options, as well as software use in networking.			2 weeks		
			<b>CLASS PERIOD (min.)</b>		
			50		
<b>ESSENTIAL QUESTIONS</b>					
<ol style="list-style-type: none"> <li>1. What are the risks of not planning and diagramming your network?</li> <li>2. What's better, wireless or wired? Explain your answer.</li> <li>3. What are the ramifications of using unlicensed or pirated software?</li> </ol>					
<b>NBEA STANDARD</b>					<b>DOK</b>
1. Use networking terminology correctly	IT-I.1	IT-V.2	IT-XIII.3	COMM-I-B.2	2
	IT-I.2	IT-VI.1	IT-XIII.4	COMM-I-B.3	
	IT-I.3	IT-VI.2	IT-XIV.1	COMM-I-C.1	
	IT-I.4	IT-VII.1	IT-XIV.2	COMM-I-C.2	
	IT-II.1	IT-VII.2	IT-XVI.1	COMM-I-C.3	
	IT-II.2	IT-VIII.1	IT-XVI.2	COMM-I-C.4	
	IT-II.3	IT-VIII.2	IT-XVI.3	COMM-I-D.1	
	IT-III.1	IT-VIII.3	COMM-I-A.1	COMM-I-D.2	
	IT-IV.1	IT-IX.1	COMM-I-A.2	COMM-I-D.3	
	IT-IV.2	IT-XII.2	COMM-I-A.3	COMM-I-D.4	
	IT-IV.3	IT-XII.3	COMM-I-A.4	COMM-IV.1	
	IT-IV.4	IT-XII.4	COMM-I-B.1	COMM-IV.2	
	IT-V.1	IT-XIII.2			
2. Draw, label, and explain functions of networking layers (OSI and TCP/IP)	IT-I.1	IT-V.2	IT-XIII.3	COMM-I-B.2	2
	IT-I.2	IT-VI.1	IT-XIII.4	COMM-I-B.3	
	IT-I.3	IT-VI.2	IT-XIV.1	COMM-I-C.1	
	IT-I.4	IT-VII.1	IT-XIV.2	COMM-I-C.2	
	IT-II.1	IT-VII.2	IT-XVI.1	COMM-I-C.3	

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	IT-II.2	IT-VIII.1	IT-XVI.2	COMM-I-C.4	
	IT-II.3	IT-VIII.2	IT-XVI.3	COMM-I-D.1	
	IT-III.1	IT-VIII.3	COMM-I-A.1	COMM-I-D.2	
	IT-IV.1	IT-IX.1	COMM-I-A.2	COMM-I-D.3	
	IT-IV.2	IT-XII.2	COMM-I-A.3	COMM-I-D.4	
	IT-IV.3	IT-XII.3	COMM-I-A.4	COMM-IV.1	
	IT-IV.4	IT-XII.4	COMM-I-B.1	COMM-IV.2	
	IT-V.1	IT-XIII.2			
3. Identify network devices (routers, switches, access points, etc.)	IT-I.1	IT-IV.2	IT-VIII.1	IT-XIII.3	1
	IT-I.2	IT-IV.3	IT-VIII.2	IT-XIII.4	
	IT-I.3	IT-IV.4	IT-VIII.3	IT-XIV.1	
	IT-I.4	IT-V.1	IT-IX.1	IT-XIV.2	
	IT-II.1	IT-V.2	IT-XII.2	IT-XVI.1	
	IT-II.2	IT-VI.1	IT-XII.3	IT-XVI.2	
	IT-II.3	IT-VI.2	IT-XII.4	IT-XVI.3	
	IT-III.1	IT-VII.1	IT-XIII.2		
	IT-IV.1	IT-VII.2			
4. List the functions of a network operating system (NOS)	IT-I.1	IT-IV.2	IT-VIII.1	IT-XIII.3	1
	IT-I.2	IT-IV.3	IT-VIII.2	IT-XIII.4	
	IT-I.3	IT-IV.4	IT-VIII.3	IT-XIV.1	
	IT-I.4	IT-V.1	IT-IX.1	IT-XIV.2	
	IT-II.1	IT-V.2	IT-XII.2	IT-XVI.1	
	IT-II.2	IT-VI.1	IT-XII.3	IT-XVI.2	
	IT-II.3	IT-VI.2	IT-XII.4	IT-XVI.3	
	IT-III.1	IT-VII.1	IT-XIII.2		
	IT-IV.1	IT-VII.2			
5. Identify types of networks (e.g., LAN, WAN, WLAN, MAN, and SAN)	IT-I.1	IT-V.2	IT-XIII.3	COMM-I-B.2	1
	IT-I.2	IT-VI.1	IT-XIII.4	COMM-I-B.3	
	IT-I.3	IT-VI.2	IT-XIV.1	COMM-I-C.1	
	IT-I.4	IT-VII.1	IT-XIV.2	COMM-I-C.2	
	IT-II.1	IT-VII.2	IT-XVI.1	COMM-I-C.3	
	IT-II.2	IT-VIII.1	IT-XVI.2	COMM-I-C.4	
	IT-II.3	IT-VIII.2	IT-XVI.3	COMM-I-D.1	
	IT-III.1	IT-VIII.3	COMM-I-A.1	COMM-I-D.2	

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	IT-IV.1	IT-IX.1	COMM-I-A.2	COMM-I-D.3	
	IT-IV.2	IT-XII.2	COMM-I-A.3	COMM-I-D.4	
	IT-IV.3	IT-XII.3	COMM-I-A.4	COMM-IV.1	
	IT-IV.4	IT-XII.4	COMM-I-B.1	COMM-IV.2	
	IT-V.1	IT-XIII.2			
6. Identify shared network resources (e.g., hardware, software)	IT-I.1	IT-IV.3	IT-VIII.3	IT-XIV.2	1
	IT-I.2	IT-IV.4	IT-IX.1	IT-XVI.1	
	IT-I.3	IT-V.1	IT-XII.2	IT-XVI.2	
	IT-I.4	IT-V.2	IT-XII.3	IT-XVI.3	
	IT-II.1	IT-VI.1	IT-XII.4	MGMT-I-B.1	
	IT-II.2	IT-VI.2	IT-XIII.2	MGMT-I-B.2	
	IT-II.3	IT-VII.1	IT-XIII.3	MGMT-VIII-A.1	
	IT-III.1	IT-VII.2	IT-XIII.4	MGMT-VIII-A.2	
	IT-IV.1	IT-VIII.1	IT-XIV.1		
	IT-IV.2	IT-VIII.2			
7. Compare and contrast advantages and disadvantages of network vs. standalone computing	IT-III.2	IT-VII.2	MGMT-VIII-A.1	COMM-I-D.3	2
	IT-I.1	IT-VIII.1	MGMT-VIII-A.2	COMM-I-D.4	
	IT-I.2	IT-VIII.2	MGMT-VIII-A.3	COMM-IV.1	
	IT-I.3	IT-VIII.3	MGMT-VIII-A.4	COMM-IV.2	
	IT-I.4	IT-IX.1	MGMT-VIII-B.3	COMP-I.1	
	IT-II.1	IT-XII.2	COMM-I-A.1	COMP-II.1	
	IT-II.2	IT-XII.3	COMM-I-A.2	COMP-II.2	
	IT-II.3	IT-XII.4	COMM-I-A.3	COMP-III.1	
	IT-III.1	IT-XIII.2	COMM-I-A.4	COMP-III.2	
	IT-IV.1	IT-XIII.3	COMM-I-B.1	COMP-IV.1	
	IT-IV.2	IT-XIII.4	COMM-I-B.2	COMP-IV.2	
	IT-IV.3	IT-XIV.1	COMM-I-B.3	COMP-V.2	
	IT-IV.4	IT-XIV.2	COMM-I-C.1	COMP-VI-G.1	
	IT-V.1	IT-XVI.1	COMM-I-C.2	COMP-VI-G.2	
	IT-V.2	IT-XVI.2	COMM-I-C.3	COMP-VI-G.3	
	IT-VI.1	IT-XVI.3	COMM-I-C.4	COMP-VI-K.2	
	IT-VI.2	MGMT-I-B.1	COMM-I-D.1	COMP-VI-K.3	
	IT-VII.1	MGMT-I-B.2	COMM-I-D.2		

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<p>8. Access shared network resources (e.g., hardware, software files)</p>	<p>IT-I.1 IT-I.2 IT-I.3 IT-I.4 IT-II.1 IT-II.2 IT-II.3 IT-III.1 IT-IV.1</p>	<p>IT-IV.2 IT-IV.3 IT-IV.4 IT-V.1 IT-V.2 IT-VI.1 IT-VI.2 IT-VII.1</p>	<p>IT-VII.2 IT-VIII.1 IT-VIII.2 IT-VIII.3 IT-IX.1 IT-XII.2 IT-XII.3 IT-XII.4</p>	<p>IT-XIII.2 IT-XIII.3 IT-XIII.4 IT-XIV.1 IT-XIV.2 IT-XVI.1 IT-XVI.2 IT-XVI.3</p>	<p align="center">2</p>
<p>9. Describe capabilities of networking media (copper, fiber, and wireless)</p>	<p>IT-I.1 IT-I.2 IT-I.3 IT-I.4 IT-II.1 IT-II.2 IT-II.3 IT-III.1 IT-IV.1 IT-IV.2 IT-IV.3 IT-IV.4 IT-V.1 IT-V.2 IT-VI.1 IT-VI.2</p>	<p>IT-VII.1 IT-VII.2 IT-VIII.1 IT-VIII.2 IT-VIII.3 IT-IX.1 IT-XII.2 IT-XII.3 IT-XII.4 IT-XIII.2 IT-XIII.3 IT-XIII.4 IT-XIV.1 IT-XIV.2 IT-XVI.1 IT-XVI.2</p>	<p>IT-XVI.3 MGMT-I-B.1 MGMT-I-B.2 MGMT-VIII-A.1 MGMT-VIII-A.2 MGMT-VIII-A.3 COMM-I-A.1 COMM-I-A.2 COMM-I-A.3 COMM-I-A.4 COMM-I-B.1 COMM-I-B.2 COMM-I-B.3 COMM-I-C.1 COMM-I-C.2 COMM-I-C.3</p>	<p>COMM-I-C.4 COMM-I-D.1 COMM-I-D.2 COMM-I-D.3 COMM-I-D.4 COMM-IV.1 COMM-IV.2 COMP-I.1 COMP-II.1 COMP-II.2 COMP-III.1 COMP-III.2 COMP-IV.1 COMP-IV.2 COMP-V.2</p>	<p align="center">3</p>
<p>10. Diagram and explain logical network topologies (e.g., star, bus, ring, broadband, baseband) and their related geometries</p>	<p>IT-I.1 IT-I.2 IT-I.3 IT-I.4 IT-II.1 IT-II.2 IT-II.3 IT-III.1 IT-IV.1</p>	<p>IT-VII.2 IT-VIII.1 IT-VIII.2 IT-VIII.3 IT-IX.1 IT-XII.2 IT-XII.3 IT-XII.4 IT-XIII.2</p>	<p>MGMT-I-B.2 MGMT-VIII-A.1 MGMT-VIII-A.2 MGMT-VIII-A.3 MGMT-VIII-A.4 MGMT-VIII-B.3 COMM-I-A.1 COMM-I-A.2 COMM-I-A.3</p>	<p>COMM-I-D.1 COMM-I-D.2 COMM-I-D.3 COMM-I-D.4 COMM-IV.1 COMM-IV.2 CARDEV-III-A.1 COMP-I.1 COMP-II.1</p>	<p align="center">3</p>

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	IT-IV.2	IT-XIII.3	COMM-I-A.4	COMP-II.2	
	IT-IV.3	IT-XIII.4	COMM-I-B.1	COMP-III.1	
	IT-IV.4	IT-XIV.1	COMM-I-B.2	COMP-III.2	
	IT-V.1	IT-XIV.2	COMM-I-B.3	COMP-IV.1	
	IT-V.2	IT-XVI.1	COMM-I-C.1	COMP-IV.2	
	IT-VI.1	IT-XVI.2	COMM-I-C.2	COMP-V.2	
	IT-VI.2	IT-XVI.3	COMM-I-C.3	COMP-VI-K.3	
	IT-VII.1	MGMT-I-B.1	COMM-I-C.4		
11. Diagram and explain physical network topology (e.g., clients, servers, networking devices, redundancy, ring, star, bus)	IT-I.1	IT-VIII.2	MGMT-VIII-A.3	COMM-IV.1	3
	IT-I.2	IT-VIII.3	MGMT-VIII-A.4	COMM-IV.2	
	IT-I.3	IT-IX.1	MGMT-VIII-B.3	CARDEV-III-A.1	
	IT-I.4	IT-XII.2	COMM-I-A.1	CARDEV-III-A.2	
	IT-II.1	IT-XII.3	COMM-I-A.2	CARDEV-III-D.1	
	IT-II.2	IT-XII.4	COMM-I-A.3	CARDEV-III-D.2	
	IT-II.3	IT-XIII.2	COMM-I-A.4	CARDEV-III-D.3	
	IT-III.1	IT-XIII.3	COMM-I-B.1	CARDEV-III-E.1	
	IT-IV.1	IT-XIII.4	COMM-I-B.2	CARDEV-III-E.2	
	IT-IV.2	IT-XIV.1	COMM-I-B.3	CARDEV-III-E.3	
	IT-IV.3	IT-XIV.2	COMM-I-C.1	COMP-I.1	
	IT-IV.4	IT-XVI.1	COMM-I-C.2	COMP-II.1	
	IT-V.1	IT-XVI.2	COMM-I-C.3	COMP-II.2	
	IT-V.2	IT-XVI.3	COMM-I-C.4	COMP-III.1	
	IT-VI.1	MGMT-I-B.1	COMM-I-D.1	COMP-III.2	
	IT-VI.2	MGMT-I-B.2	COMM-I-D.2	COMP-IV.1	
	IT-VII.1	MGMT-VIII-A.1	COMM-I-D.3	COMP-IV.2	
	IT-VII.2	MGMT-VIII-A.2	COMM-I-D.4	COMP-V.2	
	IT-VIII.1				
12. Identify types of licensing agreements	IT-V.3	IT-II.2	IT-VI.2	IT-XII.4	1
	IT-XV.1	IT-II.3	IT-VII.1	IT-XIII.2	
	IT-XV.2	IT-III.1	IT-VII.2	IT-XIII.3	
	IT-XV.3	IT-IV.1	IT-VIII.1	IT-XIII.4	
	IT-XV.4	IT-IV.2	IT-VIII.2	IT-XIV.1	
	IT-I.1	IT-IV.3	IT-VIII.3	IT-XIV.2	
	IT-I.2	IT-IV.4	IT-IX.1	IT-XVI.1	

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	IT-I.3 IT-I.4 IT-II.1	IT-V.1 IT-V.2 IT-VI.1	IT-XII.2 IT-XII.3	IT-XVI.2 IT-XVI.3	
13. Explain current network standards (e.g., IEEE, RFCs, ISO)	IT-I.1 IT-I.2 IT-I.3 IT-I.4 IT-II.1 IT-II.2 IT-II.3 IT-III.1 IT-IV.1 IT-IV.2 IT-IV.3 IT-IV.4 IT-V.1	IT-V.2 IT-VI.1 IT-VI.2 IT-VII.1 IT-VII.2 IT-VIII.1 IT-VIII.2 IT-VIII.3 IT-IX.1 IT-XII.2 IT-XII.3 IT-XII.4 IT-XIII.2	IT-XIII.3 IT-XIII.4 IT-XIV.1 IT-XIV.2 IT-XVI.1 IT-XVI.2 IT-XVI.3 COMM-I-A.1 COMM-I-A.2 COMM-I-A.3 COMM-I-A.4 COMM-I-B.1	COMM-I-B.2 COMM-I-B.3 COMM-I-C.1 COMM-I-C.2 COMM-I-C.3 COMM-I-C.4 COMM-I-D.1 COMM-I-D.2 COMM-I-D.3 COMM-I-D.4 COMM-IV.1 COMM-IV.2	2
<b>ASSESSMENT DESCRIPTIONS</b>					
<ol style="list-style-type: none"> <li>1. Informal assessments may be utilized such as observation with checklist and quizzes embedded in the vendor curriculum.</li> <li>2. Since most assessment items in network administration curricula are vendor specific and copyrighted, actual examples cannot be provided. Some suggested vendors are Cisco, Microsoft, and Comp-TIA.</li> <li>3. OSIQuiz1</li> <li>4. OSIQuiz2</li> </ol>					
<b>OBJ. #</b>	<b>INSTRUCTIONAL STRATEGIES</b>				
1-13	1. Teacher lectures and demonstrates networking concepts.				
1-13	2. Teacher facilitates a jeopardy game to review networking concepts.				
1-13	3. Teacher provides study guides for assessments.				
<b>OBJ. #</b>	<b>INSTRUCTIONAL ACTIVITIES</b>				
1-13	1. Students take notes and practice networking concepts.				
1-13	2. Students participate in a jeopardy game to review networking concepts.				
1-13	3. Students utilize study guides to prepare for networking quizzes.				
<b>UNIT RESOURCES</b>					
n/a					