Pennsylvania
DEPARTMENT OF EDUCATION

Computer Systems Networking and Telecommunications, Classification of Instructional Program (CIP) 11.0901
Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
100 DEMONSTRATE KNOWLEDGE OF PERSONAL AND ENVIRONMENTAL SAFETY.				
101 List common causes of accidents and injuries in a computer facility.	**CAREER CLUSTER 1: Arts, AV Technology and Communications Career Cluster** (Choose Standards) 1-2-3-4-5-6 **PATHWAYS INCLUDE: A. Telecommunications Career Pathway** (Choose Standards) 1-2-3	**KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A** Cite specific textual evidence, etc. **Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B** Determine the central ideas or conclusions of a text; etc. **Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C** Follow precisely a complex multistep procedure, etc.		
102 Wear personal protective equipment.				
103 List and identify safety hazard symbols.				
104 Review Material Safety Data Sheets (MSDS) and explain their requirements in handling hazardous materials.				
105 Describe types of fire extinguishers and explain which types to use for extinguishing various fires.	**CAREER CLUSTER 2: Information Technology** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **PATHWAYS INCLUDE: Information Support and Services Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Network Systems Career Pathway** (Choose Standards) 1-2-3-4-5 **Programming and Software Development Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10	**CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D** Determine the meaning of symbols, key terms, and other domain specific words. **Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E** Analyze the structure of the relationships among concepts in a text, etc. **Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F** Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a		
106 Demonstrate safe procedures to follow when lifting and carrying heavy objects.				
107 Describe the importance of safety as it relates to environmental issues.				
108 Identify potential hazards when working with power supplies.				
109 Identify proper disposal procedures for batteries and display devices.				
110 Identify proper disposal procedures for chemical solvents and pressurized cans.				
111 Identify and prevent electro static discharge conditions.				
112 Describe the meaning and importance of the Energy Star Rating System.				
113 Configure a computer's power management settings to				

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
maximize energy efficiency. 114 Maintain a safe work area to avoid common accidents and injuries.	**Web and Digital Communications Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **NOTE:** Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local area.	text. **INTEGRATE KNOWLEDGE & IDEAS** **GRADES 9-10** **Standard CC.3.5.9-10.G** Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). **Standard CC.3.5.9-10. H** Assess the reasoning in a text to support the author's claim for solving a technical problem. **Standard CC.3.5.9-10. I** Compare and contrast findings presented in a text to those from other sources, etc. **INTEGRATE KNOWLEDGE & IDEAS** **GRADES 11-12** **Standard CC.3.5.11-12. G** Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. **Standard CC.3.5.11-12. H** Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. **Standard CC.3.5.11-12. I** Synthesize information from a range of sources into a coherent understanding. **RANGE OF READING** **GRADES 9-10-11-12** **Standard CC.3.5.9-10.J** **Standard CC.3.5.11-12.J** By the end of grades 9-10, AND 11-12, read and comprehend technical		

Computer Systems Networking and Telecommunications, Classification of Instructional Program (CIP) 11.0901
Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
		texts independently and proficiently.		

Secondary Competency Task List	Common Career Technical Core Standards	Reading 3.5	Writing 3.6	Mathematics 2.0
200 DEMONSTRATE KNOWLEDGE OF COMPUTER HARDWARE.				
201 Categorize storage devices and backup media.	**CAREER CLUSTER 1: Arts, AV Technology and Communications Career Cluster** (Choose Standards) 1-2-3-4-5-6 **PATHWAYS INCLUDE: A. Telecommunications Career Pathway** (Choose Standards) 1-2-3	**KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A** Cite specific textual evidence, etc. **Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B** Determine the central ideas or conclusions of a text; etc. **Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C** Follow precisely a complex multistep procedure, etc.		**NUMBERS AND OPERATIONS Standard 2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real world or mathematical problems. **Standard 2.1.HS.F.4** Use units as a way to understand problems and to guide the solution of multistep problems. **Standard 2.1.HS.F.5** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. **Standard 2.1.HS.F.6** Extend the knowledge of arithmetic operations and apply to complex numbers.
202 Categorize the different types of computer cases.				
203 Explain motherboard components, types and features.				
204 Categorize power supplies types and characteristics.				
205 Explain the purpose and characteristics of CPUs and their features.				
206 Explain cooling methods and devices.				
207 Compare and contrast memory types, characteristics and their purpose.				
208 Distinguish between the different display devices and their characteristics.	**CAREER CLUSTER 2: Information Technology** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **PATHWAYS INCLUDE: Information Support and Services Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Network Systems Career Pathway** (Choose Standards) 1-2-3-4-5 **Programming and Software Development Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Web and Digital Communications Career**	**CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D** Determine the meaning of symbols, key terms, and other domain specific words. **Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E** Analyze the structure of the relationships among concepts in a text, etc. **Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F** Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.		
209 Summarize the function and types of adapter cards.				
210 Install and configure peripherals and input devices.				
211 Install, configure and optimize laptop components and features.				
212 Install and configure printers.				
213 Given a scenario, install, configure and maintain personal computer components.				
214 Given a scenario, detect problems, troubleshoot, and repair/replace desk top and laptop computer components.				
215 Given a scenario, diagnose and repair common printer issues.				

Computer Systems Networking and Telecommunications, Classification of Instructional Program (CIP) 11.0901

Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
	Pathway (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **NOTE:** Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local area.	**INTEGRATE KNOWLEDGE & IDEAS** **GRADES 9-10** **Standard CC.3.5.9-10.G** Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). **Standard CC.3.5.9-10. H** Assess the reasoning in a text to support the author's claim for solving a technical problem. **Standard CC.3.5.9-10. I** Compare and contrast findings presented in a text to those from other sources, etc. **INTEGRATE KNOWLEDGE & IDEAS** **GRADES 11-12** **Standard CC.3.5.11-12. G** Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. **Standard CC.3.5.11-12. H** Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. **Standard CC.3.5.11-12. I** Synthesize information from a range of sources into a coherent understanding. **RANGE OF READING** **GRADES 9-10-11-12** **Standard CC.3.5.9-10.J** **Standard CC.3.5.11-12.J** By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.		

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
300 DEMONSTRATE KNOWLEDGE OF TROUBLESHOOTING, REPAIR AND MAINTENANCE.				
301 Describe and explain the troubleshooting theory. 302 Describe, explain and interpret common hardware and operating system symptoms and their causes. 303 Describe and determine the troubleshooting methods and tools for printers. 304 Describe and interpret common laptop issues and determine the appropriate basic troubleshooting method. 305 Given a scenario, integrate common preventative maintenance techniques. 306 Compare and contrast network troubleshooting with hardware/software troubleshooting.	**CAREER CLUSTER 1: Arts, AV Technology and Communications Career Cluster** (Choose Standards) 1-2-3-4-5-6 **PATHWAYS INCLUDE: A. Telecommunications Career Pathway** (Choose Standards) 1-2-3 **CAREER CLUSTER 2: Information Technology** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **PATHWAYS INCLUDE: Information Support and Services Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Network Systems Career Pathway** (Choose Standards) 1-2-3-4-5 **Programming and Software Development Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10	**KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A** Cite specific textual evidence, etc. **Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B** Determine the central ideas or conclusions of a text; etc. **Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C** Follow precisely a complex multistep procedure, etc. **CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D** Determine the meaning of symbols, key terms, and other domain specific words. **Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E** Analyze the structure of the relationships among concepts in a text, etc. **Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F** Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the		**NUMBERS AND OPERATIONS Standard 2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real world or mathematical problems. **Standard 2.1.HS.F.4** Use units as a way to understand problems and to guide the solution of multistep problems. **Standard 2.1.HS.F.5** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. **Standard 2.1.HS.F.6** Extend the knowledge of arithmetic operations and apply to complex numbers.

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
	Web and Digital Communications Career Pathway (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **NOTE:** Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local area.	relationships among concepts in a text. **INTEGRATE KNOWLEDGE & IDEAS** **GRADES 9-10** **Standard CC.3.5.9-10.G** Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). **Standard CC.3.5.9-10. H** Assess the reasoning in a text to support the author's claim for solving a technical problem. **Standard CC.3.5.9-10. I** Compare and contrast findings presented in a text to those from other sources, etc. **INTEGRATE KNOWLEDGE & IDEAS** **GRADES 11-12** **Standard CC.3.5.11-12. G** Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. **Standard CC.3.5.11-12. H** Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. **Standard CC.3.5.11-12. I** Synthesize information from a range of sources into a coherent understanding. **RANGE OF READING** **GRADES 9-10-11-12** **Standard CC.3.5.9-10.J** **Standard CC.3.5.11-12.J** By the end of grades 9-10, AND 11-		

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
		12, read and comprehend technical texts independently and proficiently.		

400 DEMONSTRATE KNOWLEDGE OF OPERATING SYSTEMS AND SOFTWARE.				
401 Compare and contrast the different operating systems and their features. 402 Given a scenario, demonstrate proper use of user interfaces. 403 Explain the process and steps to install and configure an operating system. 404 Explain the basics of boot sequences, methods and startup utilities. 405 Select the appropriate commands and options to troubleshoot and resolve problems. 406 Differentiate between various operating system directory structures. 407 Identify and use system utilities/tools and evaluate the results. 408 Evaluate and resolve common operating system and software issues. 409 Explain the administration of local users, groups and institute local security policy. 410 Compare and contrast a network operating system (NOS) with a workstation operating system (OS).	**CAREER CLUSTER 1: Arts, AV Technology and Communications Career Cluster** (Choose Standards) 1-2-3-4-5-6 **PATHWAYS INCLUDE: A. Telecommunications Career Pathway** (Choose Standards) 1-2-3 **CAREER CLUSTER 2: Information Technology** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **PATHWAYS INCLUDE: Information Support and Services Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Network Systems Career Pathway** (Choose Standards) 1-2-3-4-5 **Programming and Software Development Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10	**KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A** Cite specific textual evidence, etc. **Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B** Determine the central ideas or conclusions of a text; etc. **Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C** Follow precisely a complex multistep procedure, etc. **CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D** Determine the meaning of symbols, key terms, and other domain specific words. **Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E** Analyze the structure of the relationships among concepts in a text, etc. **Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F** Analyze the author's purpose in providing an explanation, describing a procedure...and	**TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A** Write arguments focused on discipline specific content. **Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B** Write informative or explanatory texts, including the narration of technical processes, etc. **PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C** Produce clear and coherent writing...appropriate to task, purpose, and audience. **Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	**NUMBERS AND OPERATIONS Standard 2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real world or mathematical problems. **Standard 2.1.HS.F.4** Use units as a way to understand problems and to guide the solution of multistep problems. **Standard 2.1.HS.F.5** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. **Standard 2.1.HS.F.6** Extend the knowledge of arithmetic operations and apply to complex numbers.

Computer Systems Networking and Telecommunications, Classification of Instructional Program (CIP) 11.0901
Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
	Web and Digital Communications Career Pathway (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **NOTE:** Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local area.	Analyze the structure of the relationships among concepts in a text. **INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G** Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). **Standard CC.3.5.9-10. H** Assess the reasoning in a text to support the author's claim for solving a technical problem. **Standard CC.3.5.9-10. I** Compare and contrast findings presented in a text to those from other sources, etc. **INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12 Standard CC.3.5.11-12. G** Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. **Standard CC.3.5.11-12. H** Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. **Standard CC.3.5.11-12. I** Synthesize information from a range of sources into a coherent understanding. **RANGE OF READING GRADES 9-10-11-12 Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J**	**Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E**. Use technology, including the internet, to produce, publish, and update individual or shared writing products. **RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem. Standard CC.3.6.9-10.G**. **Standard CC.3.6.11-12.G** Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation. **Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H.** Draw evidence from informational texts to support analysis, reflection, and research. **RANGE OF WRITING GRADES 9-10-11-12 Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I.** Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.	

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
		By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.		
500 DEMONSTRATE KNOWLEDGE OF NETWORK TECHNOLOGIES.				
501 Explain the function of common networking protocols, such as FTP, TCP/IP suite, DHCP, DNS, etc. 502 Identify commonly used TCP and UDP default ports, including TCP ports: FTP – 20, 21, SSH – 22, TELNET – 23, HTTP – 80, etc. 503 Identify the following address formats, including IPv6, IPv4, MAC addressing. 504 Given a scenario, evaluate the proper use of addressing technologies and addressing schemes, including: subnetting: classful vs. classless, NAT, PAT, SNAT, public vs. private, DHCP, addressing schemes: unicast, multicast, broadcast, etc. 505 Identify common IPv4 and IPv6 routing protocols, including link state, distance vector, and hybrid protocols. 506 Explain the purpose and properties of routing, including IGP vs. EGP, static vs. dynamic, next hop, interpret routing tables and how they pertain to path selection, and explain convergence (steady state). 507 Compare the characteristics of wireless communication standards, including 802.11 standards:	**CAREER CLUSTER 1: Arts, AV Technology and Communications Career Cluster** (Choose Standards) 1-2-3-4-5-6 **PATHWAYS INCLUDE:** **A. Telecommunications Career Pathway** (Choose Standards) 1-2-3 **CAREER CLUSTER 2: Information Technology** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **PATHWAYS INCLUDE:** **Information Support and Services Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Network Systems Career Pathway** (Choose Standards) 1-2-3-4-5 **Programming and Software Development Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10	**KEY IDEAS/DETAILS GRADES 9-10-11-12** **Standard CC.3.5.9-10. A** **Standard CC.3.5.11-12 A** Cite specific textual evidence, etc. **Standard CC.3.5.9-10 B** **Standard CC.3.5.11-12. B** Determine the central ideas or conclusions of a text; etc. **Standard CC.3.5.9-10.C** **Standard CC.3.5.11-12.C** Follow precisely a complex multistep procedure, etc. **CRAFT & STRUCTURE GRADES 9-10-11-12** **Standard CC.3.5.9-10. D** **Standard CC.3.5.11-12.D** Determine the meaning of symbols, key terms, and other domain specific words. **Standard CC.3.5.9-10.E** **Standard CC.3.5.11-12.E** Analyze the structure of the relationships among concepts in a text, etc. **Standard CC.3.5.9-10.F** **Standard CC.3.5.11-12.F** Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the	**TEXT TYPES AND PURPOSE GRADES 9-10-11-12** **Standard CC.3.6.9-10.A** **Standard CC.3.6.11-12.A** Write arguments focused on discipline specific content. **Standard CC.3.6.9-10.B** **Standard CC.3.6.11-12.B** Write informative or explanatory texts, including the narration of technical processes, etc. **PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12** **Standard CC.3.6.9-10.C** **Standard CC.3.6.11-12 C** Produce clear and coherent writing...appropriate to task, purpose, and audience. **Standard CC.3.6.9-10 D** **Standard CC.3.6.11-12.D** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	**NUMBERS AND OPERATIONS** **Standard 2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real world or mathematical problems. **Standard 2.1.HS.F.4** Use units as a way to understand problems and to guide the solution of multistep problems. **Standard 2.1.HS.F.5** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. **Standard 2.1.HS.F.6** Extend the knowledge of arithmetic operations and apply to complex numbers.

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
speeds, distance, channels, frequency, authentication and encryption.	**Web and Digital Communications Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **NOTE:** Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local area.	relationships among concepts in a text. **INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G** Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). **Standard CC.3.5.9-10. H** Assess the reasoning in a text to support the author's claim for solving a technical problem. **Standard CC.3.5.9-10. I** Compare and contrast findings presented in a text to those from other sources, etc. **INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12 Standard CC.3.5.11-12. G** Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. **Standard CC.3.5.11-12. H** Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. **Standard CC.3.5.11-12. I** Synthesize information from a range of sources into a coherent understanding. **RANGE OF READING GRADES 9-10-11-12 Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J** By the end of grades 9-10, AND 11-	**Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E**. Use technology, including the internet, to produce, publish, and update individual or shared writing products. **RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem. Standard CC.3.6.9-10.G**. **Standard CC.3.6.11-12.G** Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation. **Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H.** Draw evidence from informational texts to support analysis, reflection, and research. **RANGE OF WRITING GRADES 9-10-11-12 Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I.** Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.	

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
		12, read and comprehend technical texts independently and proficiently.		

600 DEMONSTRATE KNOWLEDGE OF NETWORK MEDIA AND TOPOLOGIES.				
601 Categorize standard cable types and their properties including: UTP, STP, coaxial, fiber; plenum vs. non-plenum properties: transmission speeds, distance, duplex, noise immunity, and frequency. 602 Identify common connector types, including UTP, STP, coaxial, and fiber. 603 Identify common physical network topologies. 604 Given a scenario, differentiate and implement appropriate wiring standards, including 568A, 568B, and loopback. 605 Categorize common WAN technology types and properties. 606 Categorize common LAN technology types and Ethernet properties: CSMA/CD, broadcast, collision, bonding, speed, and distance. 607 Explain common logical network topologies and their characteristics, including peer to peer and client/server. 608 Install components of wiring distribution, including vertical and horizontal cross connects, and verify installation and termination.	**CAREER CLUSTER 1: Arts, AV Technology and Communications Career Cluster** (Choose Standards) 1-2-3-4-5-6 **PATHWAYS INCLUDE: A. Telecommunications Career Pathway** (Choose Standards) 1-2-3 **CAREER CLUSTER 2: Information Technology** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **PATHWAYS INCLUDE: Information Support and Services Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Network Systems Career Pathway** (Choose Standards) 1-2-3-4-5 **Programming and Software Development Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Web and Digital**	**KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A** Cite specific textual evidence, etc. **Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B** Determine the central ideas or conclusions of a text; etc. **Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C** Follow precisely a complex multistep procedure, etc. **CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D** Determine the meaning of symbols, key terms, and other domain specific words. **Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E** Analyze the structure of the relationships among concepts in a text, etc. **Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F** Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.	**TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A** Write arguments focused on discipline specific content. **Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B** Write informative or explanatory texts, including the narration of technical processes, etc. **PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C** Produce clear and coherent writing...appropriate to task, purpose, and audience. **Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. **Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E**.	**NUMBERS AND OPERATIONS Standard 2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real world or mathematical problems. **Standard 2.1.HS.F.4** Use units as a way to understand problems and to guide the solution of multistep problems. **Standard 2.1.HS.F.5** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. **Standard 2.1.HS.F.6** Extend the knowledge of arithmetic operations and apply to complex numbers.

Computer Systems Networking and Telecommunications, Classification of Instructional Program (CIP) 11.0901
Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
	Communications Career Pathway (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **NOTE:** Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local area.	**INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G** Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). **Standard CC.3.5.9-10. H** Assess the reasoning in a text to support the author's claim for solving a technical problem. **Standard CC.3.5.9-10. I** Compare and contrast findings presented in a text to those from other sources, etc. **INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12 Standard CC.3.5.11-12. G** Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. **Standard CC.3.5.11-12. H** Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. **Standard CC.3.5.11-12. I** Synthesize information from a range of sources into a coherent understanding. **RANGE OF READING GRADES 9-10-11-12 Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J** By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.	Use technology, including the internet, to produce, publish, and update individual or shared writing products. **RESEARCH GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem. Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G** Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation. **Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H.** Draw evidence from informational texts to support analysis, reflection, and research. **RANGE OF WRITING GRADES 9-10-11-12 Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I.** Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.	

Computer Systems Networking and Telecommunications, Classification of Instructional Program (CIP) 11.0901
Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
700 DEMONSTRATE KNOWLEDGE OF NETWORK DEVICES.				
701 Install, configure and differentiate between common network connectivity devices. 702 Identify the functions of specialized network devices such as, multilayer switch, content switch, IDS/IPS, load balancer, multifunction network devices, DNS server, bandwidth shaper, proxy server, and CSU/DSU. 703 Explain the advanced features of a switch such as, PoE, spanning tree, VLAN, trunking, port mirroring, port authentication, etc. 704 Implement a basic wireless network, including client configuration, access point placement and installation. 705 Configure appropriate encryption, configure channels and frequencies, set ESSID and beacon, and verify installation.	**CAREER CLUSTER 1: Arts, AV Technology and Communications Career Cluster** (Choose Standards) 1-2-3-4-5-6 **PATHWAYS INCLUDE:** **A. Telecommunications Career Pathway** (Choose Standards) 1-2-3 **CAREER CLUSTER 2: Information Technology** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **PATHWAYS INCLUDE:** **Information Support and Services Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Network Systems Career Pathway** (Choose Standards) 1-2-3-4-5 **Programming and Software Development Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Web and Digital Communications Career Pathway** (Choose Standards)	**KEY IDEAS/DETAILS** **GRADES 9-10-11-12** **Standard CC.3.5.9-10. A** **Standard CC.3.5.11-12 A** Cite specific textual evidence, etc. **Standard CC.3.5.9-10 B** **Standard CC.3.5.11-12. B** Determine the central ideas or conclusions of a text; etc. **Standard CC.3.5.9-10.C** **Standard CC.3.5.11-12.C** Follow precisely a complex multistep procedure, etc. **CRAFT & STRUCTURE** **GRADES 9-10-11-12** **Standard CC.3.5.9-10. D** **Standard CC.3.5.11-12.D** Determine the meaning of symbols, key terms, and other domain specific words. **Standard CC.3.5.9-10.E** **Standard CC.3.5.11-12.E** Analyze the structure of the relationships among concepts in a text, etc. **Standard CC.3.5.9-10.F** **Standard CC.3.5.11-12.F** Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text. **INTEGRATE KNOWLEDGE & IDEAS**	**TEXT TYPES AND PURPOSE** **GRADES 9-10-11-12** **Standard CC.3.6.9-10.A** **Standard CC.3.6.11-12.A** Write arguments focused on discipline specific content. **Standard CC.3.6.9-10.B** **Standard CC.3.6.11-12.B** Write informative or explanatory texts, including the narration of technical processes, etc. **PRODUCTION & DISTRIBUTION OF WRITING** **GRADES 9-10-11-12** **Standard CC.3.6.9-10.C** **Standard CC.3.6.11-12 C** Produce clear and coherent writing...appropriate to task, purpose, and audience. **Standard CC.3.6.9-10 D** **Standard CC.3.6.11-12.D** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. **Standard CC.3.6.9-10.E** **Standard CC.3.6.11-12.E**. Use technology, including the internet, to produce, publish, and update	**NUMBERS AND OPERATIONS** **Standard 2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real world or mathematical problems. **Standard 2.1.HS.F.4** Use units as a way to understand problems and to guide the solution of multistep problems. **Standard 2.1.HS.F.5** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. **Standard 2.1.HS.F.6** Extend the knowledge of arithmetic operations and apply to complex numbers.

Computer Systems Networking and Telecommunications, Classification of Instructional Program (CIP) 11.0901
Units of Instruction and Task Grid Linked to Pennsylvania Core Standards

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
	1-2-3-4-5-6-7-8-9-10 **NOTE:** Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local area.	**GRADES 9-10** **Standard CC.3.5.9-10.G** Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). **Standard CC.3.5.9-10. H** Assess the reasoning in a text to support the author's claim for solving a technical problem. **Standard CC.3.5.9-10. I** Compare and contrast findings presented in a text to those from other sources, etc. **INTEGRATE KNOWLEDGE & IDEAS** **GRADES 11-12** **Standard CC.3.5.11-12. G** Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. **Standard CC.3.5.11-12. H** Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. **Standard CC.3.5.11-12. I** Synthesize information from a range of sources into a coherent understanding. **RANGE OF READING** **GRADES 9-10-11-12** **Standard CC.3.5.9-10.J** **Standard CC.3.5.11-12.J** By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.	individual or shared writing products. **RESEARCH** **GRADES 9-10-11-12** **Standard CC.3.6.9-10.F** **Standard CC.3.6.11-12.F** **Conduct short and more sustained research to answer a question or solve a problem.** **Standard CC.3.6.9-10.G**. **Standard CC.3.6.11-12.G** Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation. **Standard CC.3.6.9-10.H.** **Standard CC.3.6.11-12.H.** Draw evidence from informational texts to support analysis, reflection, and research. **RANGE OF WRITING** **GRADES 9-10-11-12** **Standard CC.3.5.9-10.I &** **Standard CC.3.5.11-12.I.** Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.	
800 DEMONSTRATE KNOWLEDGE OF NETWORK MANAGEMENT.				

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
801 Explain, compare and contrast the layers of the TCP/IP and OSI models. 802 Identify types of configuration management documentation such as, wiring schematics, physical and logical network diagrams, baselines, policies, procedures and configurations, and regulations. 803 Given a scenario, evaluate the network based on configuration management documentation such as, comparisons of wiring schematics, physical and logical network diagrams, baselines, policies and procedures and configurations to network devices and infrastructure, update wiring schematics, physical and logical network diagrams, configurations and job logs as needed. 804 Conduct network monitoring to identify performance and connectivity issues such as, packet sniffers, connectivity software, load testing, throughput testers, system logs, history logs, and event logs. 805 Explain different methods and rationales for network performance optimization.	**CAREER CLUSTER 1: Arts, AV Technology and Communications Career Cluster** (Choose Standards) 1-2-3-4-5-6 **PATHWAYS INCLUDE: A. Telecommunications Career Pathway** (Choose Standards) 1-2-3 **CAREER CLUSTER 2: Information Technology** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **PATHWAYS INCLUDE: Information Support and Services Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Network Systems Career Pathway** (Choose Standards) 1-2-3-4-5 **Programming and Software Development Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **Web and Digital Communications Career Pathway** (Choose Standards) 1-2-3-4-5-6-7-8-9-10 **NOTE:** Refer to the Common Career Technical Core	**KEY IDEAS/DETAILS GRADES 9-10-11-12 Standard CC.3.5.9-10. A Standard CC.3.5.11-12 A** Cite specific textual evidence, etc. **Standard CC.3.5.9-10 B Standard CC.3.5.11-12. B** Determine the central ideas or conclusions of a text; etc. **Standard CC.3.5.9-10.C Standard CC.3.5.11-12.C** Follow precisely a complex multistep procedure, etc. **CRAFT & STRUCTURE GRADES 9-10-11-12 Standard CC.3.5.9-10. D Standard CC.3.5.11-12.D** Determine the meaning of symbols, key terms, and other domain specific words. **Standard CC.3.5.9-10.E Standard CC.3.5.11-12.E** Analyze the structure of the relationships among concepts in a text, etc. **Standard CC.3.5.9-10.F Standard CC.3.5.11-12.F** Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text. **INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10 Standard CC.3.5.9-10.G** Translate quantitative or technical information expressed in a text into	**TEXT TYPES AND PURPOSE GRADES 9-10-11-12 Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A** Write arguments focused on discipline specific content. **Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B** Write informative or explanatory texts, including the narration of technical processes, etc. **PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12 Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C** Produce clear and coherent writing...appropriate to task, purpose, and audience. **Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. **Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E**. Use technology, including the internet, to produce, publish, and update individual or shared writing products. **RESEARCH**	**NUMBERS AND OPERATIONS Standard 2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real world or mathematical problems. **Standard 2.1.HS.F.4** Use units as a way to understand problems and to guide the solution of multistep problems. **Standard 2.1.HS.F.5** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. **Standard 2.1.HS.F.6** Extend the knowledge of arithmetic operations and apply to complex numbers.

Secondary Competency Task List with Unit and Task Numbers:	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.0
	Standards Booklet if you wish to add more Pathways, for your local area.	visual form (e.g. a table or chart). **Standard CC.3.5.9-10. H** Assess the reasoning in a text to support the author's claim for solving a technical problem. **Standard CC.3.5.9-10. I** Compare and contrast findings presented in a text to those from other sources, etc. **INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12 Standard CC.3.5.11-12. G** Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. **Standard CC.3.5.11-12. H** Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. **Standard CC.3.5.11-12. I** Synthesize information from a range of sources into a coherent understanding. **RANGE OF READING GRADES 9-10-11-12 Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J** By the end of grades 9-10, AND 11-12, read and comprehend technical texts independently and proficiently.	**GRADES 9-10-11-12 Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem. Standard CC.3.6.9-10.G**. **Standard CC.3.6.11-12.G** Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation. **Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H.** Draw evidence from informational texts to support analysis, reflection, and research. **RANGE OF WRITING GRADES 9-10-11-12 Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I.** Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.	