

WARREN COUNTY SCHOOL DISTRICT

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Information Technology

Course Number: 00925 (am) and 00975 (pm)

Course Prerequisites: A student must have earned the required credit as listed in the WCCC student planning guide to be enrolled in the Information Technology program

Course Description: **11.0901 Computer Systems Networking** This is a three-year program designed to prepare students to enter the job market as an industry certified PC support technician or a post-secondary school with earned college credit upon entrance. Students complete a series of certifications that include CompTIA IT Fundamentals, CompTIA A+ and a NOCTI skilled worker competence certification. Students learn communication skills, customer service and professionalism by working on customer machines brought into the class for repair and by supporting the computers and users within the WCCC. The beginning curriculum focuses on personal computer, laptop and portable device, printer, scanner: hardware, configuring and support and security/safety. Students learn Windows 11 and Windows 10 customization, support, configuration and administration. The advanced curriculum takes students through networking, server administration and cybersecurity. Students also can be part of Future Business Leaders of America (FBLA) and SkillsUSA and compete for district, state and national awards.

Suggested Grade Level: Grades 10-12

Length of Course: Two Semesters

Units of Credit: 3

PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:

#13 Emergency Certification, #66 Vocational Instruction & Vocational Intern Certification, #7 Level II (permanent certification,

To find the CSPG information, go to [CSPG](#)

Certification verified by the WCSD Human Resources Department: ☒ Yes ☐ No

WCSD STUDENT DATA SYSTEM INFORMATION

Course Level: Academic

Mark Types: Check all that apply.

☒ F – Final Average ☒ MP – Marking Period ☒ EXM – Final Exam

GPA Type: ☐ GPAEL-GPA Elementary ☐ GPAML-GPA for Middle Level ☐ NHS-National Honor Society

☒ UGPA-Non-Weighted Grade Point Average ☐ GPA-Weighted Grade Point Average

State Course Code: 2102 Computer Servicing Technician

To find the State Course Code, go to [State Course Code](#), download the Excel file for SCED, click on SCED 6.0 tab, and choose the correct code that corresponds with the course.

WARREN COUNTY SCHOOL DISTRICT

PLANNED INSTRUCTION

TEXTBOOKS AND SUPPLEMENTAL MATERIALS

Board Approved Textbooks, Software, and Materials:

Title: Comp TIA A+ Guide to IT Technical Support (11th Edition)
Publisher: COMPTIA
ISBN #: 13: 978-0357674161 10: 0357674162
Copyright Date: 2022
WCSD Board Approval Date: [Click or tap here to enter text.](#)

Supplemental Materials: [Click or tap here to enter text.](#)

Title: **TestOut IT Fundamentals Pro version 1.2**
Publisher: **Testout Corporation**
ISBN #: 978-1-935080-70-1
Copyright Date: 2020
WCSD Board Approval Date: [Click or tap here to enter text.](#)

Supplemental Materials: [Click or tap here to enter text.](#)

Title: **TestOut PC Pro version 7.0**
Publisher: **Testout Corporation**
ISBN #: 978-1-935080-42-8
Copyright Date: 2022
WCSD Board Approval Date: [Click or tap here to enter text.](#)

Supplemental Materials: [Click or tap here to enter text.](#)

Title: **TestOut Network Pro version 6.0**
Publisher: **Testout Corporation**
ISBN #: 978-1-935080-43-5
Copyright Date: 2021
WCSD Board Approval Date: [Click or tap here to enter text.](#)

Supplemental Materials: [Click or tap here to enter text.](#)

Title: **TestOut PC Pro version 7.0**
Publisher: **Testout Corporation**
ISBN #: 978-1-935080-44-2
Copyright Date: 2021
WCSD Board Approval Date: [Click or tap here to enter text.](#)

Supplemental Materials: [Click or tap here to enter text.](#)

Curriculum Document

WARREN COUNTY SCHOOL DISTRICT**PLANNED INSTRUCTION****WCSD Board Approval:**

Date Finalized: Click or tap to enter a date.
Date Approved: Click or tap to enter a date.
Implementation Year: Click or tap here to enter text.

SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

REQUIRED COURSE SEQUENCE AND TIMELINE:

100	Demonstrate knowledge of Personal and Environmental Safety	50 hours
200	Computer Hardware	195 hours
300	Troubleshooting, Repair and Maintenance	95 hours
400	Operating Systems and Software	150 hours
500	Network Troubleshooting	90 hours
600	Network Media and Topologies	50 hours
700	Network Devices	100 hours
800	Network Management	90 hours
900	Network Tools and Troubleshooting	50 hours
1000	Security Fundamentals	150 hours
1100	Communication and Professionalism	60 Hours

COOP**36 weeks (optional)**

100 Personal and Environmental Safety		
List common causes of accidents and injuries in a computer facility	101	Year 1
Wear personal protective equipment.	102	Year 1-2-3
List and identify safety hazard symbols.	103	Year 1
Review Safety Data Sheets (SDS) and explain their requirements in handling hazardous materials.	104	Year 1
Review Safety Data Sheets (SDS) and explain their requirements in handling hazardous materials.	105	Year 1-2-3
Use safe procedures to follow when lifting and carrying heavy objects	106	Year 1
Describe the importance of safety as it relates to environmental issues	107	Year 1-2-3

WARREN COUNTY SCHOOL DISTRICT		
PLANNED INSTRUCTION		
Identify potential hazards when working with power supplies.	108	Year 1
Identify proper disposal procedures for batteries, display devices, and all other electronic equipment.	109	Year 1
Identify proper disposal procedures for chemical solvents and pressurized cans	110	Year 1
Prevent electrostatic discharge conditions.	111	Year 1-2-3
Configure a computer's power management settings to maximize energy efficiency.	113	Year 1
Maintain safe work area to avoid common accidents and injuries.	114	Year 1-2-3
200 Computer Hardware		
Categorize storage devices and backup media.	201	Year 1
Categorize the different types of computer cases.	202	Year 1
Explain motherboard components, types, and features.	203	Year 1
Categorize power supply types and characteristics.	204	Year 1
Explain the purpose and characteristics of CPUs and their features.	205	Year 1
Explain cooling methods and devices.	206	Year 1
Compare and contrast memory types, characteristics, and their purpose.	207	Year 1,3
Distinguish between the different display devices and their characteristics.	208	Year 1
Summarize the function and types of adapter cards.	209	Year 1,2
Install and configure peripherals and input devices.	210	Year 1,3
Configure and optimize portable devices, such as laptops, tablets, and smart devices.	211	Year 1
Install and configure printers	212	Year 1,3
Install configure and maintain personal computer components.	213	Year 1
Repair/replace desktop and laptop computer components	214	Year 1
Implement RAID solutions	216	Year 1,3
300 Troubleshooting, Repair and Maintenance		
Apply industry standard troubleshooting methods.	301	Year 1-2-3
Troubleshoot common hardware and operating system symptoms and their causes.	302	Year 1-2-3
Identify common laptop issues and determine the appropriate basic troubleshooting method.	304	Year 1
Integrate common preventative maintenance techniques.	305	Year 1-2-3
Diagnose and repair common printer issues.	307	Year 1
400 Operating Systems and Software		
Identify different operating systems by their features.	401	Year 1,3
Use various user interfaces.	402	Year 1,3
Install and configure an operating system.	403	Year 1,3

WARREN COUNTY SCHOOL DISTRICT		
PLANNED INSTRUCTION		
Explain boot sequences, methods, and startup utilities for various operating systems.	404	Year 1
Select the appropriate commands and options to troubleshoot and resolve problems.	405	Year 1-2-3
Differentiate between various operating system directory structures.	406	Year 1,3
Use system utilities/tools and evaluate the results.	407	Year 1-2-3
Troubleshoot common OS and software issues.	408	Year 1,3
Manage local users, groups, and institute local security policies.	409	Year 1-2-3
Install and configure a network and workstation operating system.	410	Year 2
Network Technologies		
Explain the function of common networking protocols, such as FTP, TCP/IP suite, DHCP, DNS.	501	Year 2 - 3
Identify commonly used TCP and UDP default ports, including TCP ports: FTP – 20, 21, SSH – 22, TELNET – 23, HTTP – 80.	502	Year 2
Identify address formats, including IPv6, IPv4, MAC.	503	Year 1-2-3
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).	504	Year 2 - 3
Identify common IPv4 and IPv6 routing protocols, including link state, distance vector, and hybrid protocols.	505	Year 2
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, convergence (steady state).	506	Year 2
Identify the characteristics of wireless communication, including 802.11 and 802.15 standards: speeds, distance, channels, frequency, authentication, and encryption.	507	Year 2
Identify the basic elements of unified communication technology, such as VoIP, video, real time services, POS, and UC devices	508	Year 2
Implement technologies that support cloud computing.	509	Year 2 - 3
Implement virtualization technologies.	510	Year 3
600 Network Media and Topologies		
Categorize standard cable types and their properties, e.g., UTP, STP, coaxial, fiber; plenum vs. non-plenum properties: transmission speeds, distance, duplex, noise immunity, frequency.	601	Year 2
Identify common connector types, including UTP, STP, coaxial, and fiber.	602	Year 2
Identify common physical network topologies.	603	Year 1 - 2
Differentiate and fabricate cables according to TIA/EIA 568A and 568B standards, including patch, crossover, and rollover cables.	604	Year 1 - 2
Categorize common WAN technology types and properties.	605	Year 2
Categorize common LAN technology types and ethernet properties, e.g., CSMA/CD, broadcast, collision, bonding, speed, distance.	606	Year 2

WARREN COUNTY SCHOOL DISTRICT		
PLANNED INSTRUCTION		
Explain common logical network topologies and their characteristics, including peer to peer and client/server.	607	Year 2
Install components of wiring distribution, including vertical and horizontal cross connects, verify installation and termination and environmental requirements.	608	Year 2
700 Network Devices		
Install, configure, and differentiate between common network connectivity devices.	701	Year 2 - 3
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, CSU/DSU.	702	Year 2 - 3
Explain the advanced features of a switch, such as PoE, spanning tree, VLAN, trunking, port mirroring, port authentication.	703	Year 2
Install a basic wireless network, including client configuration, access point placement and installation.	704	Year 2
Configure appropriate encryption, configure channels and frequencies, set ESSID and beacon, and verify installation.	705	Year 2
800 Network Management		
Explain, compare, and contrast the layers of the TCP/IP and OSI models.	801	Year 2 - 3
Prepare physical and logical network diagrams, baselines, policies, procedures, and configurations and regulations.	802	Year 3
Evaluate the network based on configuration management documentation, such as wiring schematics; physical and logical network diagrams; baselines; policies, procedures, and configurations to network devices and infrastructure; wiring schematics; physical and logical network diagrams; and configurations and job logs.	803	Year 3
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.	804	Year 2 - 3
Implement remote management technologies.	806	Year 2 - 3
900 Network Tools and Troubleshooting		
Utilize command line/graphical tools and interpret the output to verify functionality including, Traceroute, Ipconfig, Ifconfig, and Ping.	901	Year 2 - 3
Use network scanners, such as packet sniffers, intrusion detection software, Intrusion prevention software, and port scanners.	902	Year 2
Utilize the appropriate hardware tools for cable fabrication and troubleshooting.	903	Year 2
Implement network troubleshooting methodologies, including information gathering – identify symptoms and problems, identify the affected areas of the network.	904	Year 2
Develop an action plan and solution identifying potential effects, implement and test the solution, identify the results and effects of the solution, document the solution, and the entire process.	905	Year 1-2-3

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Troubleshoot common wired and wireless connectivity issues and select an appropriate solution to include physical and logical issues.	906	Year 1 - 2
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ASSESSMENTS

PDE Academic Standards, Assessment Anchors, and Eligible Content:

The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content and incorporate them regularly into planned instruction.

Formative Assessments:

The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

Effective formative assessments for this course include:

Analyzing student work, strategic questioning

Summative Assessments:

The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

Effective summative assessments for this course include:

NOCTI Written and Performance Tests (2nd and 3rd year students – during senior year) developed by the National Occupational Competency Testing Institute. Students who score advanced will receive the PA Skills Certificate in Information Technology signed by the Governor of Pennsylvania. Students who score advanced and successfully complete the Program of Study Task Grid will earn SOAR PA state-wide articulated credit and any additional approved articulated college credit.