

Week	Semester
1	Path to PC Technician
2	The Visible PC, Networks, Windows, Mac, and Linux Operating Systems
3	Inside the PC: Processors, Ram, Motherboards, Power Supplies, HardDrives, Cards, and Cables
4	
5	Operating Systems: Troubleshooting & Optimization
6	
7	Input and Output Devices
8	Networking & Browsing
9	Multimedia
10	
11	Printer & Hard Copy Devices
12	PC Security
13	3 rd Party Programs and Web Based Utilities
14	
15	Technology Design
16	
17	A+ Certification Practice
18	

Mathematics	Course: PC Hardware						
Topic							
Path of the PC Technician							
Time Frame	Block – 4 Days						
Essential Questions							
<ul style="list-style-type: none"> • What are the various paths to becoming a PC Technician? • What common traits do computer technicians possess? • What are the proper safety and tools needed for the PC Technician? 							
Enduring Understandings							
The definition of a proper PC Technician and how a person becomes one. Basic safety protocols and the proper tools to diagnose build and repair technology.							
Alignment to New Jersey Common Core Standards							
WORK.9-12.9.1.12.1 TEC.9-12.8.1.12.A1							
Key Concepts and Skills							
<ul style="list-style-type: none"> • An idea of the different jobs and positions available to the computer literate. • Defining what it is to be a professional tech in society. • An understanding of the different tool kits need to perform the various tasks ahead. • An overview of safety and the hazards/pitfalls of working with electronics. 							
Learning Activities							
<ul style="list-style-type: none"> • Comprehensive survey to assess skill set and determines aptitude and potential placement. • Behavior and Dress Matching Activity and Role Play. • Hands-on look at tools to define their proper use. • Exploration of unsafe work habits with a discovery exercise on how to avoid potential problems. • General exercise on safety setup with electric devices. 							
Assessments							
<ul style="list-style-type: none"> • Quick quiz assessment on each key concept. • Matching activity and Role Play. • Unit Assessment/Test. 							
21st Century Skills							
	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills		Information Literacy	x	Media Literacy		
Interdisciplinary Connections							
General Work habits for 21 st Century Skills. Science lab safety protocols.							
Technology Integration							
Overview of personal computer and specialized tool set.							

Time Frame	Block – 5 Days						
Topic							
The Visible PC, Networks, Windows, Mac, and Linux Operating Systems							
Essential Questions							
<ul style="list-style-type: none"> • How does the PC work? • What is a network? • What is an operating system? 							
Enduring Understandings							
An overview of the personal computer and all of its components. How these parts interact and their uses. The concept of a network and how the modern pc uses it. An overview on the software that makes the pc run. The three major operating systems, their similarities and differences.							
Alignment to New Jersey Common Core Standards							
SCI.9-12..5.1.12.A.2							
SCI.9-12.8.1.12.A.3							
TEC.9-12.8.1.12.A.3							
Key Concepts and Skills							
<ul style="list-style-type: none"> • How the PC works. A computer is a collection of components and their interactivity. • Operating systems and the Bios are the software that brings the hardware to life. • There are three similar operating systems used in the world today. • A network is a way to connect and share information between computers. 							
Learning Activities							
<ul style="list-style-type: none"> • A layout and definition stage of all the components in a common household pc. • Hands-on look at the system bios and how we configure it. • Research on the three major operating systems to determine cost and specifications required. • Lecture and discussion to define the three operating systems and their specific specialty. • Mathematical look at network theory and how we apply it to the modern computer network. 							
Assessments							
<ul style="list-style-type: none"> • Verbal quiz on hardware: what they are, where they go and if they are a necessity or a luxury. • Quiz on how to open a system bios and configure it. • Quiz on operating systems and their uses and specifications required. • Unit Assessment/Test. 							
21st Century Skills							
	Creativity	x	Critical Thinking	x	Communication		Collaboration
x	Life & Career Skills		Information Literacy	x	Media Literacy		
Interdisciplinary Connections							
Connections to Science lab work and Technology standards.							
Technology Integration							
Use of internet, pc and various software resources.							

Time Frame	Block – 8 Days						
Topic							
Inside the PC: Processors, Ram, Motherboards, Power Supplies, Hard Drives, Cards, and Cables							
Essential Questions							
<ul style="list-style-type: none"> • What are the parts needed to construct and build a modern personal computer? • How do I identify the connector end of each pc component? • What is the order of operations for pc construction? • How do I know I put my pc together correctly? 							
Enduring Understandings							
<ul style="list-style-type: none"> • The ability to identify and define a modern computer part. • The knowledge of pc construction and the proper path to creating a working home computer. 							
Alignment to New Jersey Common Core Standards							
WORK.9-12.9.1.12.2 SCI.9-12.5.1.12.A.1 TEC.9-12.8.1.12.F.2							
Key Concepts and Skills							
<ul style="list-style-type: none"> • Processors, Ram, Motherboards, Power Supplies, Hard Drives, Cards, and Cables are the basic components that make up a modern pc. • Processor is the brain, Ram is the memory, Power supplies give the energy, Hard Drive hold the information, Card provide input and output, and Cables connect it all together. • To achieve a “POST” is to have the computer assembled correctly. • #1 on the cable marked red is the power connection. • Grounding is important in eliminating static electricity on assembly. • Specifications are a road map to proper assembly. 							
Learning Activities							
<ul style="list-style-type: none"> • Board game operation style of identification of pc component and parts. • Visual overview of all connectors and how to identify their power connection and proper placement. • Basic electronic seminar on sizing up the amount of power needed to run all components. • Lecture and discussion on the various types of pc’s available and their different needs. • Matching exercise to determine different specifications of different components. 							
Assessments							
<ul style="list-style-type: none"> • Quick quiz assessment on each key concept. • Quiz on component specification. • General hands on first design of their own working computer. • Unit Assessment/Test. 							
21st Century Skills							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
Interdisciplinary Connections							
Mathematical connection to order of operations.							
Technology Integration							
Internet, web based resources, document camera, pc and components.							

Time Frame	Block – 10 Days						
Topic							
Operating Systems: Troubleshooting & Optimization.							
Essential Questions							
<p>What is software and what are operating systems? Which operating system do I install? How do I install an operating system? What do I do when things don't work?</p>							
Enduring Understandings							
<p>The definition of the Windows 7/8, Mac OSX, and Ubuntu Linux Operating Systems. The proper ways to install/update/dual boot an operating system. An understanding of a proper working operating system. Limited booting of an operating system for debug purposes. General debug/tweaks to turn a non-working OS into a fully functioning OS.</p>							
Alignment to New Jersey Common Core Standards							
<p>SCI.9-12.5.1.12.A.1 TEC.9-12.8.1.12.F.2</p>							
Key Concepts and Skills							
<ul style="list-style-type: none"> • Software is code that makes the hardware work the way the user wants. • An operating system is the software that puts a usable interface on the personal computer. • There are many different OS's and they have different hardware requirements. • An installation of an operating system is the loading of the software into a place the hardware can read interpret and use it. • Not all installations work and some require an adjustment in system settings to meet the user's requirements. 							
Learning Activities							
<ul style="list-style-type: none"> • An overview of software and the code used to create it. • Lecture and discussion on the history of operating systems, their evolution, differences, and similarities. • Internet research on OS's, their cost and hardware specifications. • A guided walk through of the installation of the three main operating systems. • Hands on exercise to determine when things go wrong. 							
Assessments							
<ul style="list-style-type: none"> • Quiz on software and operating systems. • Visual inspection of student's research and hands on activity. • Unit Assessment/Test. 							
21st Century Skills							
	Creativity	x	Critical Thinking		Communication		Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
Interdisciplinary Connections							
Connections to Science lab work and Technology standards.							
Technology Integration							
Use of internet, pc and various software resources.							

Time Frame	Block – 5 Days				
Topic					
Input and Output Devices					
Essential Questions					
What is meant by input and output? What are the common input/output devices? What is a port and how does it work?					
Enduring Understandings					
Input devices allow the user to share information with the computer. Output devices allow the computer to share information with the user. A port is a door that a computer opens to communicate					
Alignment to New Jersey Common Core Standards					
SCI.9-12.5.1.12.B.1 TEC.9-12.8.1.12.A3					
Key Concepts and Skills					
Identification of what external equipment is an input/output device. How to use the common input and output devices. The ability to configure ports to allow communication to the various input and output devices.					
Learning Activities					
Lecture, define and discuss ports, the various types of input and output devices, their uses and setup. Exploration with the “Shields Up” website. Hands on installation of the common devices on all three major operating systems.					
Assessments					
Quick quiz assessment on each key concept. Unit Assessment/Test.					
21st Century Skills					
	Creativity	x		Communication	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy
Interdisciplinary Connections					
General Work habits for 21 st Century Skills.					
Technology Integration					
Use of internet, pc and various software resources. Document camera and web resources.					

Time Frame	Block – 5 Days					
Topic						
Networking and Browsers						
Essential Questions						
What is networking and how is achieved?						
What is the internet and how does it function?						
What is a browser and how does it function?						
Enduring Understandings						
A network is a collection of computers connected by a wiring system. The internet is the largest network with rules for sharing information. A browser is a window to help navigate and make sense out of the internet's addressing system.						
Alignment to New Jersey Common Core Standards						
TEC.9-12.8.1.12.D.1						
TEC.9-12.8.1.12.D.2						
SCI.9-12.5.1.12.A.b						
Key Concepts and Skills						
The ability to set up a personal computer, so, it can share information and see other shared information.						
The ability to identify the necessary components and set up to achieve networking.						
An idea of what the internet, ip addresses, and a dns server are and how to use them.						
The ability to select, configure, and install a browser, plug-ins, and extensions.						
Learning Activities						
Lecture and discussion to define networking, the internet and browsers.						
Hands-on activity to set up a basic hardwired and wireless network and connection to the internet.						
Hands-on activity to choose and install/configure a browser. (Internet Explorer, Firefox, Google Chrome)						
Assessments						
Visual quiz on setting up a wired/wireless network between two pcs.						
Quiz on internet addressing systems.						
Visual quiz on installing and configuring one of the three common browsers.						
Unit Assessment/Test.						
21st Century Skills						
	Creativity	x	Critical Thinking	x	Communication	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy	
Interdisciplinary Connections						
Technology standards.						
Technology Integration						
Use of internet, pc and various software resources.						

Time Frame	Block – 7 Days						
Topic							
Multimedia							
Essential Questions							
<p>What is multimedia? Is sound/video important? What different hardware and software are used in multimedia? What is the difference between capture, conversion and playback?</p>							
Enduring Understandings							
<p>The historical evolution of media formats and their uses. Choosing the correct speakers, headphones, microphones, monitors, projectors, and media drives. Understanding the differences between all the available media formats, how to read, copy, capture, and write to them.</p>							
Alignment to New Jersey Common Core Standards							
<p>TEC.9-12.8.1.12.D.1 TEC.9-12.8.1.12.G.1 SCI.9-12.5.1.12.A.a</p>							
Key Concepts and Skills							
<ul style="list-style-type: none"> • The ability to select and size the multimedia requirements for any situation. • The correct uses for different mediums and their applications in the modern world. • The ability to pick the correct software and specifications to achieve good sounding/looking multimedia production. • Authoring and converting media for various format to format needs, 							
Learning Activities							
<ul style="list-style-type: none"> • Lecture and discuss about all available multimedia mediums. • Internet research to determine the proper audio and visual needs for various situations. • Hands-on ripping/burning of multimedia files. • Hands-on conversion of select multimedia files to determine correct setup and quality. 							
Assessments							
<ul style="list-style-type: none"> • Quick quiz assessment on each key concept. • Visual quiz on media conversion, burning and ripping. • Unit Assessment/Test. 							
21st Century Skills							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
Interdisciplinary Connections							
Connections to the performing arts and presentation.							
Technology Integration							
Internet, web based resources, document camera, pc and components.							

Time Frame	Block – 3 Days						
Topic							
Portable Computing							
Essential Questions							
<p>What makes a computer portable? Can I build/upgrade my own portable computer? Is the hardware layout in a portable computer different from my desktop? What are the different types of manufactured portable computers? How do I enhance performance and extend battery life in a portable situation.</p>							
Enduring Understandings							
<p>A computer with a battery backup is considered portable. There are four types of manufactured portable computers: Laptops, Netbooks, Ultra books and Tablets. Home construction of a manufactured portable computer is difficult but maintenance and upgrades are possible. Hardware layout of a portable computer sacrifices performance for space and power needs.</p>							
Alignment to New Jersey Common Core Standards							
<p>TEC.9-12.8.1.12.A.3 SCI.9-12.5.1.12.B.1</p>							
Key Concepts and Skills							
<ul style="list-style-type: none"> • The ability to define and understand a portable computer. • Maintaining, managing, and upgrading portable devices. • The ability to identify the right portable computer for the correct need. 							
Learning Activities							
<ul style="list-style-type: none"> • Lecture and discuss the various types of portable computers to define, compare and contrast its hardware layout. • Hands-on activity to diagnose portable computer specific problems. • Guided examples on how to change settings to enhance performance and increases battery life. • Hands-on activity to upgrade certain components of portable computers. 							
Assessments							
<ul style="list-style-type: none"> • Quick quiz assessment on newly defined concepts and terms. • Visual quiz on identifying portable computer parts. • Quiz on settings and parameters. • Unit Assessment/Test. 							
21st Century Skills							
	Creativity	x	Critical Thinking		Communication		Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
Interdisciplinary Connections							
Connections to lab science error analysis.							
Technology Integration							
Internet, web based resources, document camera, pc and components.							

Time Frame	Block – 3 Days					
Topic						
Printer and Hard Copy Devices						
Essential Questions						
<ul style="list-style-type: none"> • What are the different type of printers and what are their uses? • How does my PC connect and use these different type of printers? • What is a print server? • What is a hard copy device? 						
Enduring Understandings						
Printers come in different ink formats and connect in many ways. Each different type of printer has certain type of appropriate use.						
Alignment to New Jersey Common Core Standards						
TEC.9-12.8.2.12.F.1						
TEC.9-12.8.2.12.G.1						
SCI.9-12.5.1.12.A.a						
Key Concepts and Skills						
<ul style="list-style-type: none"> • The ability to identify and connect all printers and hard copy devices. • An understanding of the two types of home printers (inkjet and laser) and what their similarities and differences are. • An understanding of the various connection methods for home printers.(USB, Ethernet, Wireless) 						
Learning Activities						
<ul style="list-style-type: none"> • Lecture, discuss and display the various types of printers and their connection. • Hands-on activity to connect a printer through usb, ethernet and wireless. • Discussion and guided example to display common problems that occur with home printers. 						
Assessments						
<ul style="list-style-type: none"> • Quick quiz assessment on each key concept. • Visual inspection of Hands-on activity. • Unit Assessment/Test. 						
21st Century Skills						
	Creativity	x	Critical Thinking	x	Communication	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy	
Interdisciplinary Connections						
Connection to 21 st century skills.						
Technology Integration						
Use of internet, pc and various software resources. Document camera and web resources.						

Time Frame	Block – 7 Days						
Topic							
PC Security							
Essential Questions							
<ul style="list-style-type: none"> • What is PC security? • How do I analyze/eliminate threats to my system? • What are the latest and most effective security concepts and theories? 							
Enduring Understandings							
Security for PCs are constantly changing and evolving. There are no permanent fixes or iron clad fixes for security breaches. A few basic concepts and rules can give the average user a mostly secure system.							
Alignment to New Jersey Common Core Standards							
TEC.9-12.8.1.12.D.2							
TEC.9-12.8.1.12.D.3							
TEC.9-12.8.1.12.D.4							
SCI.9-12.5.1.12.A.2							
Key Concepts and Skills							
<ul style="list-style-type: none"> • The ability to identify and eliminate viruses, malware and unauthorized access. • How to configure a router to minimize problems in a home system. • The many uses of a firewall and port protection. • The future of network security and their problems. • Basic concepts in hacking and online defenses. 							
Learning Activities							
<ul style="list-style-type: none"> • Lecture and discuss the various aspects/theories for home network/pc security. • Hands-on demonstration of antivirus and malware software. • Hands-on activity of basic network security and port masking. • Lecture and discuss about basic system and password hacking and how to defend a pc/network from it. 							
Assessments							
<ul style="list-style-type: none"> • Verbal quiz on pc security concepts. • Visual assessment on using antivirus and malware software. • Visual assessment on network security and port masking. • Unit Assessment/Test. 							
21st Century Skills							
	Creativity	x	Critical Thinking		Communication		Collaboration
x	Life & Career Skills	x	Information Literacy		Media Literacy		
Interdisciplinary Connections							
Connections to Science lab work and Technology standards.							
Technology Integration							
Use of internet, pc and various software resources.							

Time Frame	Block – 10 Days						
Topic							
3 rd Party Programs and Web Based Utilities							
Essential Questions							
<ul style="list-style-type: none"> • Why do I have this computer and what needs can it serve? • What is meant by third party? • What is client server? 							
Enduring Understandings							
An understanding of all of the various uses of the modern computer and it's programs in our society.							
Alignment to New Jersey Common Core Standards							
TEC.9-12.8.2.12.F.1							
TEC.9-12.8.2.12.G.1							
SCI.9-12.5.1.12.A.a							
Key Concepts and Skills							
<ul style="list-style-type: none"> • The ability to assess the need of a user and apply the correct software solution. • Installation of computer software. • Matching software specifications to hardware specifications so it runs properly. • Installing/Identifying the correct system software to run web based utilities. 							
Learning Activities							
<ul style="list-style-type: none"> • Lecture and discuss all of the possible uses for a personal computer. • Internet research assignment to identify the proper software tools for a productive part of private industry. • Hands-on installation techniques. • Hands-on activity to determine the components needed to run web based apps. 							
Assessments							
<ul style="list-style-type: none"> • Quick quiz assessment on each key concept. • Internet research assignment presentation. • Visual inspection of web based app or installed program running correctly. • Unit Assessment/Test. 							
21st Century Skills							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
Interdisciplinary Connections							
21 st century skills.							
Technology Integration							
Internet, web based resources, document camera, pc and components.							

Time Frame	Block – 10 Days						
Topic							
Technology Design							
Essential Questions							
How do I assess the technology needs of a person?							
Where do I go to do research on the various types of pc components and software?							
How do I write up a paper budget and draft of a model pc?							
Enduring Understandings							
The understanding of what the appropriate technology is for the need. How to locate the appropriate parts and set up an outline for construction with budget.							
Alignment to New Jersey Common Core Standards							
SCI.9-12.5.12.B.2							
SCI.9-12.5.12.C.b							
SCI.9-12.5.12.D.2							
WORK.9-12.9.1.12.A.1							
TEC.9-12.8.2.12.B.2							
Key Concepts and Skills							
<ul style="list-style-type: none"> • The correct use of interviewing techniques to form the right questions to set up a definition of a person’s technology needs. • The ability to do internet research and find all the components needed to construct a working pc. • The ability to set up a budget and a basic outline of need resources. 							
Learning Activities							
<ul style="list-style-type: none"> • Classroom survey project that helps us determine the correct questions to get to the bottom of an individual’s technology needs. • Internet research project on 3rd party vendors sites to create a listed budget of materials to fill that need. • Classroom presentation on the pc with a Q&A session to help identify better solutions. 							
Assessments							
<ul style="list-style-type: none"> • Survey questions submitted. • Visual inspection of list and budget. • Technology design presentation. • Unit Assessment/Test. 							
21st Century Skills							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy		
Interdisciplinary Connections							
Connections 21 st century standards.							
Technology Integration							
Use of internet, pc and various software resources.							

Time Frame	Block – 10 Days						
Topic							
Hardware Assembly, Debug, and Troubleshooting							
Essential Questions							
Can I take computer parts and make a working pc?							
Enduring Understandings							
Through identification and testing a working pc can be created.							
Alignment to New Jersey Common Core Standards							
SCI.9-12.5.1.12.B.3							
Key Concepts and Skills							
A culmination of all the skill acquired throughout the course. The ability to create their own pc.							
Learning Activities							
The students will work in small teams to create a working pc with operating system and software from donated junk.							
Assessments							
The working pc that operates and has a purpose.							
21st Century Skills							
x	Creativity	x	Critical Thinking	x	Communication	x	Collaboration
x	Life & Career Skills		Information Literacy		Media Literacy		
Interdisciplinary Connections							
General Work habits for 21 st Century Skills.							
Technology Integration							
Use of internet, pc and various software resources. Document camera and web resources.							

Time Frame	Block – 3 Days					
Topic						
A+ Certification Practice						
Essential Questions						
<ul style="list-style-type: none"> • What is A+ certification and why is it necessary? • How do I become A+ certified? 						
Enduring Understandings						
The understanding of what is it to be hardware certified. Knowledge of what is on the A+ certification test. How a person prepares and signs up for the A+ examination.						
Alignment to New Jersey Common Core Standards						
TEC.9-12.8.1.12.D.1						
TEC.9-12.8.1.12.D.2						
SCI.9-12.5.1.12.A.b						
Key Concepts and Skills						
<ul style="list-style-type: none"> • A set list of topics that are covered by the A+ certification assessment. • An idea of a study strategy. • The information that helps the student register and take the A+ certification exam. 						
Learning Activities						
<ul style="list-style-type: none"> • Lecture and discuss what the A+ exam is and why it is needed in society. • A review session on the important material that will be assessed by the exam. • Students will play a hands-on game that tests their knowledge of modern technology. • A guide step by step instruction on how to register for the exam. 						
Assessments						
<ul style="list-style-type: none"> • A+ certification practice test 1. • A+ certification practice test 2. 						
21st Century Skills						
	Creativity	x	Critical Thinking	x	Communication	Collaboration
x	Life & Career Skills	x	Information Literacy	x	Media Literacy	
Interdisciplinary Connections						
Technology standards.						
Technology Integration						
Use of internet, pc and various software resources.						