Moon Area School District Curriculum Map

Course: CHS Information Technology I
Grade Level: 10-12
Content Area: Business Education
Frequency: Semester Course

Big Ideas

1. Course Introduction
2. PC Technician Responsibilities
3. Hardware
4. Operating System Basics
5. Storage
6. System Implementation
7. System Management 1
8. System Management 2
9. File Management
10. Peripheral Devices
11. Networking
12. Mobile Devices

Essential Questions

1. What safety precautions should you take when handling computer components?
2. What is the proper way to lift heavy objects?
3. What is electrostatic discharge (ESD) and how can it be a hazard to electronic computer components?
4. What is the material safety data sheet (MSDS)?
5. What is the best way to dispose of printer cartridges?
6. Why should you be cautious when handling old CRT monitors?
7. What is the difference between a brownout and a blackout?
8. What is the difference between an online UPS and an offline UPS?
9. What are some ways you can make a good impression on a client?
10. How should you respond to a difficult client situation?
11. What is change management?
12. What components are typically included in a change request?
13. What is a risk analysis?
14. Why is dust a hazard to a computer?
15. What is the difference between a positive pressure system and a negative pressure system?
16. What causes EMI?
17. Which materials can you use to clean internal PC components?
18. What is a good tool to use to retrieve a screw that has fallen into a computer case?
19. What types of electrical properties can a multimeter measure?
20. How does a loopback plug verify that a device can both send and receive signals?

21. Why is the end user an important troubleshooting resource?
22. How does good documentation help in the troubleshooting process?
23. Why is it important to check the simple, obvious solutions first?
24. How do you know if you should fix the problem right away or establish a plan of action?
25. What is the difference between policies and procedures?
26. How can a knowledge base provide support for employees?
27. What steps are included in an offboarding process?
28. What are the advantages and disadvantages of coaxial cable?
29. Why are wires twisted together in twisted pair cables?
30. What is the difference between STP and UTP cabling?
31. What is the difference between Cat6 and Cat6a cabling?
32. Which connector type and cable grade is used to connect a cable modem to the internet connection?
33. What advantages do fiber optic cables offer over twisted pair or other media choices? What are the disadvantages of implementing fiber optic cables?
34. What is the difference between single-mode cables and multi-mode cables?
35. What are the two classifications for how universal serial bus (USB) devices are powered?
36. What is a digital visual interface (DVI) interface used for and why is it still useful?
37. What is the video connection found on most televisions and entertainment systems?
38. Why is the USB-C connection so popular?
39. What is the hard drive connection frequently used in modern computers?
40. What is Small Computer System Interface (SCSI) and why is it still used after 20 years?
41. What does a Molex connector do?
42. What can you do to connect older peripherals with newer computers?
43. What is a form factor and why is it important?
44. What functions do chipsets perform on newer systems?
45. What are the basic steps of installing a motherboard?
46. What are some typical onboard input/output (I/O) connectors?
47. What is a Peripheral Component Interconnect (PCI) and why is it used?
48. What symptoms indicate system power problems? How do you troubleshoot system power problems?
49. How do you interpret error codes generated during POST?
50. What symptoms indicate system overheating? How do you troubleshoot overheating issues?
51. What symptoms indicate internal and external device failures? How do you troubleshoot internal and external device failures?
52. What is the difference between static random-access memory (SRAM) and dynamic random-access memory (DRAM)?
53. What are two advantages of using Double-Data Rate Synchronous Dynamic RAM 3 (DDR3) memory over DDR2 memory?
54. What is the difference between small outline dual in-line memory module (SODIMM) and universal dual in-line memory module (UniDIMM)?
55. How does DDR4 differ from DDR3?
56. Why is consulting the motherboard documentation so important when purchasing memory?
57. You have DDR2 memory with a column address signal (CAS) latency of 6 and DDR3 memory with a CAS latency of 7. What can you tell about the relative speed of the two memory modules?
58. What is the difference between error correction code (ECC) and registered memory?
59. How does a triple-channel configuration and a quad-channel configuration differ?

60. What should you do after installing the memory?
61. How can you tell the difference between an ST connector and an SC connector?
62. What does a memory error indicate?
63. What are the symptoms of memory errors? How do you troubleshoot memory problems?
64. What has happened when the system boots, but the memory count is incorrect?
65. When might a memory problem manifest itself?
66. What are the functions of the basic input/output system (BIOS)?
67. What is the role of the complementary metal-oxide-semiconductor (CMOS)? How does it differ from the BIOS?
68. Why does CMOS require a battery?
69. What might be common reasons for editing CMOS settings?
70. What determines the keystroke to open a CMOS editor? How can you find this information?
71. What functions do the power on self test (POST) process perform?
72. What are the differences between the four levels of cache memory?
73. What is the biggest limitation of using a 32-bit processor?
74. What factors should be considered when comparing the speed of computers?
75. What are the benefits of using a smaller processor size during central processing unit (CPU) manufacture?
76. What is the difference between hyper-threading and multithreading?
77. Under what circumstances might you choose to use throttling?
78. What is virtualization? Which CPU features enable advanced virtualization support?
79. Which components are used with a CPU to dissipate heat?
80. What are the basic troubleshooting steps for a processor?
81. What should you do when a processor is overheating?
82. What do POST beeps indicate?
83. What advantage does a Peripheral Component Interconnect Express (PCIe) bus have over a PCI bus?
84. Which type of devices typically use mini PCI cards?
85. Which bus type is commonly used by graphics cards?
86. What type of slot can a PCIe x1 expansion card be placed in?
87. How does the video card affect the quality of the image on the monitor?
88. Which type of Digital Video Interface (DVI) connector sends digital signals only?
89. How does the graphics processing unit (GPU) increase the video performance?
90. What are the differences between integrated graphics and dedicated video cards?
91. What advantages are provided by the Scalable Link Interface (SLI) and CrossFire?
92. What is the general function of High-Bandwidth Digital Content Protection (HDCP)? When should you be concerned with an HDCP video card or monitor?
93. When would a capture card be used?
94. What do you need to do to play Audio Interchange File Format (AIFF) files on a Windows computer?
95. What color typically indicates the speaker port on a sound card? What color is used for the microphone?
96. Which connectors are used for digital S/PDIF audio?
97. Which encoding techniques are used for surround sound audio?
98. How does adequate cooling improve performance and extend the life of components?
99. How does organizing and attaching cables and wires in and around a computer system help with internal airflow?
100. Why should you keep the system case cover on during normal operations?
101. Why is it important that case fans are installed properly?
102. When might you want to add liquid cooling to a computer?

103. What is the difference between an active heat sink and a passive heat sink?
104. What is the function of thermal paste? When should you use it?
105. What are the names of the Windows power states?
106. What is the purpose of each power state?
107. What is an operating system (OS)?
108. What are four of the most common operating systems?
109. What are the risks of using an operating system after its end-of-life (EOL)?
110. What is the difference between a proprietary and an open-source operating system?
111. What basic features are offered with each of the common Windows versions?
112. What is the difference between Windows Pro and Windows Pro for Workstations?
113. When would it be beneficial to use either workgroups or domain access accounts?
114. How can the gpedit.msc utility be helpful?
115. How can you customize the Windows user interface?
116. How does a Windows in-place upgrade differ from Windows clean installation?
117. Why do many administrators choose to use a command line interface on a Linux server?
118. What is a Linux distribution?
119. Which common commands can you use to navigate through shells?
120. Which types of items can Tab be used to complete once you start typing the entities' name?
121. What is the difference between free software and open-source software?
122. What are some characteristics unique to Apple or MacOS systems?
123. Which keyboard key does the MacOS use for most keyboard shortcuts?
124. Which MacOS feature is used to install Windows on an Apple system?
125. What file system does MacOS use?
126. What is the Finder's primary purpose?
127. What are the components of the MacOS user interface?
128. How do you access the multiple desktop feature?
129. What are the advantages of SSDs over all other forms of storage media?
130. How does a flash device differ from a hard disk?
131. Which storage device types are magnetic media? Which are optical? Which are solid state?
132. What enhancements does SATA2 provide that the original SATA specifications do not?
133. What is eSATA? When would you use it?
134. What are two ways to configure a SATA2 drive with a system that supports only SATA1?
135. How does SATA2 differ from SATA3?
136. What advantage does eSATAp have over eSATA?
137. How much data does a compact disc (CD) typically hold? How much data does a digital versatile disc (DVD) hold? How much data does a Blu-ray disc (BD) hold?
138. An optical drive speed is identified as 24x10x70. What does each of the numbers indicate?
139. A DVD drive and a Blu-ray drive can both read data at 4x speeds. How does the drive's speed compare to the amount of data that can be transferred?
140. How are Blu-ray drives made compatible with CD, DVD, and Blu-ray discs?
141. What is the difference between BD-R and BD-RE discs?
142. Which type of connector attaches an optical drive to the motherboard?
143. How do striping and mirroring differ?
144. What is parity?
145. How does a Redundant Array of Independent Disks (RAID) 0 configuration improve disk read and write performance?

146. With a RAID 0 configuration, what happens to the data if a drive in the set fails?
147. What is the minimum number of disks required for a RAID 5 configuration?
148. What advantages does RAID 5 have over RAID 1?
149. How do RAID 5 and RAID 10 differ?
150. What is the difference between a partition and a volume?
151. What advantages does NTFS provide over FAT32?
152. Why should you back up all data before formatting a drive?
153. How can you reformat a drive from FAT to NTFS without losing the data?
154. How would you convert a drive from NTFS to FAT32?
155. Which operating systems can use NTFS?
156. What are the requirements for creating a mount point?
157. Which types of volumes support mount points?
158. What are the prerequisites for extending a volume on a basic disk?
159. What advantages do dynamic disks provide when extending volumes?
160. What is the difference between an extended volume and a spanned volume?
161. Which components do you use to create storage spaces?
162. What is the difference between a storage pool and a storage space?
163. Which hardware devices can you use to make storage pools?
164. What are the benefits of using storage pools?
165. You are comparing the hardware required for two-way mirroring and three-way mirroring. What is the minimum number of disks required for each data resiliency type?
166. How does thin provisioning allow you to allocate more storage space to users than is available in the pool?
167. What tasks does the Disk Cleanup app perform?
168. What causes fragmentation? How does defragmenting improve how a system performs?
169. Why should you not defragment a solid-state drive (SSD)?
170. How is a lost cluster different from a cross-linked file?
171. Which utility could you use to detect and mark bad clusters?
172. A hard disk is performing slowly. What can you do to speed up its performance?
173. A system fails to boot, displaying an Operating System Not Found error message. What could cause this issue?
174. A hard disk connected to the motherboard is not recognized by the Basic Input/Output System (BIOS)/Unified Extensible Firmware Interface (UEFI) firmware. What is the cause of this issue?
175. A hard disk is making noise. What should you do?
176. A computer system has a solid-state drive (SSD) installed. What should you do to optimize the useable lifespan of this device?
177. The operating system (OS) cannot find the Redundant Array of Independent Disks (RAID) array. What could cause this issue?
178. RAID stops working, but has the appropriate driver loaded. What could cause this issue?
179. Under which circumstances should you choose a clean Windows installation?
180. What is the advantage of a dual-boot system?
181. When would you choose a Windows upgrade rather than a clean installation?
182. Which types of media can you install Windows from?
183. What is a repair installation?
184. When can you use an upgrade installation?
185. How is Windows updated after installation?
186. What is cloud computing?
187. What are the advantages of cloud computing?

188. What is the difference between Platform as a Service (PaaS) and Software as a Service (SaaS)?
189. How can virtualization help you provide legacy software to users?
190. What is a hypervisor?
191. How do you enable Hyper-V in a Windows environment?
192. What configuration tasks can you perform using Control Panel?
193. Which tool lets you view running tasks and current memory use?
194. How does Msconfig differ from Msinfo32? When are you more likely to use Msconfig instead of Msinfo32?
195. Which of the following utilities typically shows the same information included in the other two utilities: Msconfig, Msinfo32, or Dxdiag?
196. How should you typically modify settings in the registry?
197. How can you customize the look and feel of the Windows desktop environment?
198. How does indexing optimize the process for finding files on Windows?
199. Where can you adjust the speed of the cursor in Windows?
200. How do you extend the display of a computer to a second monitor?
201. Which system components are commonly monitored to troubleshoot system performance?
202. When examining system performance statistics, what is the difference between counters and objects?
203. What should you do if the processor utilization in a system is consistently over 90%?
204. What should you do if the amount of memory being utilized in a system is close to the amount of RAM installed?
205. What should you do if the page file utilization in a system is near 100%?
206. What causes thrashing? Which performance statistic can you use to identify thrashing?
207. Which statistics should you examine to diagnose a network adapter bottleneck?
208. What is the difference between a traditional desktop application and an application from the Microsoft Store?
209. What are important system requirements to check before installing a new application?
210. What is the difference between a 32-bit and a 64-bit operating system?
211. How can older applications be configured to run on newer versions of Windows?
212. What is a software package?
213. Which Linux distributions use the yum command to manage software? Which distributions use apt-get or apt?
214. Which yum command searches online repositories for a particular package, downloads it, and installs it?
215. Which yum command downloads and installs the latest updates for packages installed on the system?
216. Which apt-get or apt command uninstalls a package from the system?
217. Which apt-get or apt command updates all the installed packages on a system?
218. Which option can you use with the ps command to view all processes running on the system?
219. How can you get help with a Linux command?
220. What is the difference between a personal software license and an enterprise (or volume) software license?
221. What does an End User License Agreement (EULA) contain?
222. How does open source software differ from software protected by a proprietary license agreement?
223. How are open source development projects funded?
224. How does online software activation work?
225. What are common Digital Rights Management (DRM) technologies?

226. What is the benefit of using virtual memory?
227. How does virtual memory work?
228. What is the purpose of swapping?
229. What is the benefit of using a separate hard disk for the paging file?
230. What condition causes disk thrashing? How can you reduce its effects?
231. What are common causes of the black/blue screen of death?
232. What are troubleshooting options for boot problems in Windows?
233. How do you use the System File Checker (SFC) to check for corrupted files?
234. What can you do if a service fails to start when Windows loads?
235. What can you do if there are low memory warnings?
236. What is a simple fix for most USB controller resource warnings?
237. What can you do if the operating system is not found?
238. What is scripting?
239. What are some common uses for scripting?
240. Which scripting languages are used on different operating systems?
241. What are the advantages of a workgroup?
242. How is a workgroup different from a domain?
243. What is an organizational unit (OU)?
244. If a GPO is applied to an organizational unit, how does it affect objects in the OU?
245. How can groups simplify security administration?
246. What is the difference between local authentication and domain authentication?
247. What is a distribution group used for?
248. What is Windows Hello?
249. What is User Account Control (UAC)?
250. What is the difference between Remote Desktop and Remote Assistance?
251. What are the security concerns associated with remote access?
252. What are the three ways you can send a Remote Assistance invitation?
253. What is the Remote Desktop Connection tool used for?
254. How does a remote access virtual private network (VPN) differ from a host-to-host VPN?
255. Which devices are configured as the VPN tunnel endpoints with a site-to-site VPN?
256. What does Point-to-Point Tunneling Protocol (PPTP) use for encryption? What does Layer Two Tunneling Protocol (L2TP) use?
257. What is the difference between Authentication Header (AH) and Encapsulating Security Payload (ESP) when used with IPsec?
258. What are two reasons updates are released for an operating system?
259. How does keeping a system up to date increase security?
260. Which tasks can be completed using Windows Update?
261. How are updates applied on Linux and macOS operating systems?
262. Which type of data is backed up with a system image backup?
263. Why should you test restore methods?
264. Where should you store backup media?
265. Which types of media can Backup and Restore write to?
266. What is the difference between Backup and Restore and File History?
267. Which system recovery methods can you use when you are unable to boot the computer?
268. What are the advantages of using a recovery disc/partition to recover a system?
269. Which methods can you use to recover lost data files?
270. When should a system image backup be restored in the recovery process?
271. What are the general stages of the Windows startup process?

272. What should you do if you hear a series of beeps when the system powers on and nothing displays on the monitor?
273. Which symptoms may indicate a corrupt or missing boot sector?
274. How do you correct a corrupt MBR or partition table?
275. How can you cause the output of a command to list one screen at a time when using Command Prompt in Windows?
276. How do you repeat a command by causing the most recent command to appear in Command Prompt?
277. Which function does the cd .. command provide?
278. Which dir command can you use to display files that are not read-only?
279. Which command removes subdirectories and files in the current directory?
280. What are the main differences between the copy command and the xcopy command?
281. Which two file attributes can you not assign at the same time?
282. How are share permissions different from NTFS permissions?
283. Which permissions (share or NTFS) apply to both local and network accessed files?
284. What does it mean if permissions are cumulative?
285. Which actions can you complete within a folder if you have the Modify permission to that folder?
286. How does inheritance work regarding NTFS permissions?
287. Which encryption method encrypts individual files so that only the owner and authorized users can decrypt the file and read it?
288. Why is it important to not move files encrypted with EFS to a non-NTFS partition?
289. How does file encryption differ from disk encryption?
290. What is the role of a TPM when implementing whole disk encryption?
291. Which editions of Windows provide BitLocker support?
292. How can BitLocker be implemented on Windows systems that don't have a TPM chip on the motherboard?
293. Which protocols are commonly used to establish a VPN? Which protocol is typically used for web transactions?
294. Which protocols are commonly used to encrypt and secure wireless communications?
295. What are the three types of peripheral devices?
296. Which connector is used by most peripheral devices?
297. Which peripheral devices require little to no configuration?
298. How can you verify that a device is compatible with a particular computer?
299. Which peripheral devices require special software or drives to function?
300. What is the difference between an input device and an output device?
301. What are some of the specifications used by display devices?
302. What are the benefits of a higher resolution?
303. What is the refresh rate?
304. Which components comprise the video system in a PC?
305. What can cause no output on a video monitor?
306. The output on a video monitor displays in VGA mode. What could cause this?
307. A monitor suddenly shuts off during use. What could cause this?
308. What can cause the output of an LCD to look pixilated and chunky?
309. What are causes of a dim LCD screen?
310. Which setting can you change to stop an LCD from flickering?
311. How can you remove image retention on a plasma display?
312. An LCD monitor has dead and stuck pixels. How can you fix this issue?
313. What setting can affect the size of images and icons?
314. Which type of hardware devices use direct memory access (DMA) channels to communicate directly with random-access memory (RAM)?

315. When is it necessary to manually configure a device?
316. Which system rights are required to install devices?
317. What is the function of the driver?
318. What is the importance of driver signing? What should you be aware of when using a driver that is not signed?
319. How do you safely remove a hot swappable component?
320. How do you verify that a device is compatible with the version of Windows you are running before you purchase it?
321. Where are the best places to obtain the most up-to-date version of a driver for each of the following: a Windows system, a macOS system, and a Linux system?
322. What are the first items you should check when you have installed a new device and it is not working properly?
323. How do you verify that a device is recognized and enabled in Device Manager?
324. What should you do if the system crashes during startup before you can log on?
325. If you cannot boot the system into Safe Mode, which steps should you take to boot the system?
326. Once you get a system started after reducing it to a minimal state, how do you identify a component that has a problem?
327. What is the role of host devices in a peer-to-peer network?
328. What benefits does implementing a network provide to an organization?
329. How do you determine which portion of a IPv4 address is the network ID and the host ID?
330. What type of network is created when you pair wireless earbuds to a cell phone?
331. Which device connects multiple networks together?
332. What is the main difference between Transmission Control Protocol (TCP) and User Datagram Protocol (UDP)?
333. What are the steps of the 3-way handshake?
334. What are some of the most common uses of UDP?
335. Which protocols does email use?
336. What port does Hypertext Transfer Protocol Secure (HTTPS) use?
337. Which numbering system is most used in computers and electronic systems?
338. Which values does the hexadecimal numbering system use?
339. What is a physical address? Logical address?
340. How many bits is an IPv4 address?
341. How many bits is an IPv6 address?
342. How can an IPv6 address be shortened?
343. What network resources can a server provide access to?
344. What are the components of a FQDN?
345. What is IoT?
346. What are the most common IoT communication protocols?
347. What CPUs can be used in an embedded system?
348. Which Institute of Electrical and Electronics Engineers (IEEE) standard defines how wireless networks operate?
349. How many non-overlapping channels are in the 2.4 GHz range? 5 GHz range?
350. What encryption algorithm does WPA2 use?
351. Which wireless access method allows a device to connect to the wireless network by pressing a button?
352. What is the first configuration change you should perform on a new wireless router?
353. What authentication protocol is typically used by DSL providers?
354. What technology allows multiple computers to share a single public IP address on the internet?

355. What does the Universal Plug and Play (UPnP) feature do?
356. Which networking device connects two networks together?
357. What is the main difference between a hub and switch?
358. Which Power over Ethernet (PoE) standard can provide up to 100 watts of power?
359. Which internet connection is provided over coaxial cable?
360. Which internet connection uses light to transmit data?
361. Which network utility shows the current IP configuration in Linux?
362. Which network utility would you use to test the connection between two devices?
363. Which network utility shows each hop a packet makes?
364. What should you do first when troubleshooting any network issue?
365. What is the localhost IP address?
366. What are common causes of jitter?
367. What is the difference between full-duplex and half-duplex?
368. Why don't processors for laptop computers require the large heat sink and fan combinations that desktop PCs use to dissipate heat?
369. How can you continue to use a notebook when a component fails?
370. What kinds of components are typically built into a notebook computer?
371. What steps should you take when repairing or replacing a notebook component?
372. What is the function of the docking station?
373. How do you add devices to a notebook computer?
374. How do you identify the location of components and replacement procedures for notebook systems?
375. What types of displays are available?
376. What is the benefit of using organic light-emitting diode (OLED) displays?
377. What non-display devices are integrated in the display?
378. What components allow you to see liquid crystal displays (LCDs)?
379. What are the names of the Windows power states?
380. What is the purpose of each power state?
381. What options are available and what changes can you make to those options?
382. What is the difference between a laptop computer and mobile device?
383. Which operating systems run on mobile devices?
384. What features are commonly included in mobile devices?
385. How do you connect a mobile device to a network?
386. How do you synchronize data between a mobile device and desktop PC or laptop computer?
387. What is biometric authentication?
388. What is multifactor authentication?
389. What is the set number of failed login attempts allowed on a mobile device?
390. If you lose a mobile device, how can you find it?
391. Which type of device encryption does not encrypt deleted files?
392. Which tools can you use to troubleshoot mobile devices?
393. What are the common causes of touchscreen issues?
394. What should you do if a mobile device's battery is swollen?
395. What can cause a mobile device to perform poorly?
396. What is the difference between a cell tower analyzer and a wireless network (Wi-Fi) analyzer?

Primary Resource(s) & Technology:

Microsoft Teams, Promethean Board, Student Laptops, Lab Desktops

Pennsylvania and/or focus standards referenced at:
www.pdesas.org
www.education.pa.gov

Big Ideas/ EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
1, 1-4	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• What are the course prerequisites? • Which major topics are covered in the course? • Which certification does this course prepare you for? • What is the difference between hardware and software? • What are some of the internal components of a computer?	3-5 Days
2, 5-27	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• Protection and Safety • Environmental Controls • Professionalism • Change Management • PC Maintenance • PC and Networking Tools • General troubleshooting • Support Systems • Documentation	7 Days
3, 28-106	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• Network Media • Cables and Connectors • Cases and Motherboards • Motherboard Troubleshooting • Memory • Memory Installation • Memory Troubleshooting • BIOS/UEFI • Processors • Processor Troubleshooting • Video and Expansion Cards • Audio • Cooling • Power Supplies	7 Days
4, 107-128	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F	• Operating Systems • Windows Basics • Linux Basics • MacOS Basics	7 Days

	1.2.11 A		
5, 129-178	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• Storage Devices • SATA • Optical Media • RAID • File Systems • Storage Management • Storage Spaces • Disk Optimization • Storage and RAID Troubleshooting	7 Days
6, 179-191	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• Windows Pre-Installation • Windows Installation • Cloud Computing • Virtualization	7 Days
7, 192-240	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• Windows System Tools • Windows Settings • Performance Monitoring • Windows Application Management • Linux Application Management • Digital Content Management • Virtual Memory • Windows and Application Troubleshooting • Scripting Basics	7 Days
8, 241-274	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• Active Directory • Users and Groups • Remote Services • VPN • Updates • System Backup • System Recovery • Windows Boot Errors	7 Days
9, 242-294	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• Manage Files on Windows • NTFS and Share Permissions • File Encryption	7 Days

10, 295-326	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• Peripheral Devices • Display Devices • Display, Video and Projector Troubleshooting • Device Driver Management • Device Driver Troubleshooting •	7 Days
11, 327-367	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• Networking Overview • Networking Ports and Protocols • Client-Side Network Configuration • Services Provided by Network Devices • Wireless Networking • SOHO Configuration • Networking Hardware • Command Line Network Utilities • Network Troubleshooting •	7 Days
12, 368-396	3.6.12B 3.7.12 C 3.7.12 D 3.7.12 E 3.8.12 C 1.1.11 F 1.2.11 A	• Laptops • Mobile Device Displays and Components • Laptop Power Management • Mobile Devices • Mobile Device Network Connectivity • Mobile Device Security • Laptop and Mobile Device Troubleshooting	7 Days