Google IT Support Certificate

The Google IT Support Certificate is a hands-on, online program designed to prepare beginner learners for entry-level jobs in IT support upon completion of the certificate. Developed by Google, the program covers the fundamentals of IT support, including troubleshooting, customer service, networking, operating systems, system administration, and security. Learners who complete the Google IT Support Certificate will gain the skills required to succeed in an entry-level IT job by learning how to:

- Provide end-to-end customer support, ranging from identifying problems to troubleshooting and debugging.
- Perform day-to-day IT support tasks including computer assembly, wireless networking, installing programs, and customer service.
- Use systems including Linux, Domain Name Systems, Command-Line Interface, and Binary Code.

Equipment Needed: All learners must have a computer with reliable internet to access course content. Reliable internet access is necessary to complete hands-on course activities. Headphones are also a good option for a noisy environment.

SEMESTER PLAN:

Below includes a detailed guide for you to follow as you complete the course work. The goal is to keep you on track to finish your certificate within the allotted timeframe.

Expectations and Best Practices
Online learning allows for the flexibility of working at your own pace to meet a deadline, but it's helpful to establish a routine to stay on target and remember when work is due! Here's one that has worked well for students previously:

- **Monday/Tuesday**: Review all new material for the week and watch all assigned videos by end of day on Tuesday.

- **Rest of the week:** Complete work at your own pace. Aim to complete <u>at least</u> one task each day, no matter how large or small. With work, you may complete core coursework on Saturdays and Sundays. *Reminder:* To ensure you are actively participating, discussion posts may require you to post multiple times throughout the week.

- **Sunday:** Typically, weekly assignments are due at the end of the day on Sunday. Review that you have completed each assignment for that week.

Now that you have reviewed the coursework guidelines, please take a moment to review a general breakdown of each course, including estimates of how much time each may take based on the quantity and difficulty of the content. As you work though this plan, reach out to you professor with questions, concerns, and if you need clarifications.

Course 1: *Technical Support Fundamentals*

This course is the first of a series that aims to prepare learners for a role as an entry-level IT Support Specialist. In this course, learners will be introduced to the world of Information Technology, or IT. They will learn about the different facets of Information Technology, like computer hardware, the internet, computer software, troubleshooting, and customer service. This course covers a wide variety of topics in IT that are designed to give them an overview of what's to come in this certificate program.

Week 1

MODULE 1: Introduction to IT (3 hours 15 minutes total module time)

In the first module of the course, learners will explore how computers were invented, how they've evolved over time, and how they work today. They'll learn what an IT Support Specialist is and what they do. By the end of this module, learners will know how to count like a computer using binary and understand the significance of binary code.

Module items:

- 1 discussion prompt
- 2 practice quizzes
- 1 graded quiz
- 1 reading
- 14 videos

MODULE 2: Hardware (3 hours 40 minutes total module time)

In the second module of this course, learners cover what's inside a computer. Learners will get to know the hardware components of a computer. They will discover what each component does and how they work together to make a computer function. By the end of this module, learners will also know how to build a computer from scratch.

Module items:

- 2 discussion prompts
- 3 practice quizzes
- 1 graded quiz
- 6 readings
- 16 videos

Week 2

MODULE 3: Operating Systems (5 hours 8 minutes total module time)

In the third module of this course, learners will explore operating systems (OS). They will learn about the common operating systems that are used today and understand how they work with the computer hardware. Learners will review the "boot process" of an operating system and show learners how to install Windows, Linux, and Mac OSX operating systems. Finally, learners will use the hands-on lab environment to interact directly with the Windows and Linux operating systems.

Module items

- 1 discussion prompt
- 2 hands-on labs
- 2 practice quizzes
- 1 graded quiz
- 6 readings
- 21 videos

MODULE 4: Networking (2 hours 16 minutes total module time)

In the fourth module of this course, learners cover computer networking. Learners explore the history of the internet and what "the web" actually is. They'll also discuss topics like internet privacy, security, and the future of the internet. Learners will also analyze the limitations of the internet and why they occur. By the end of this module, learners will know how the internet works and recognize both the positive and negative impacts that the internet has had on the world.

Module items

- 2 discussion prompts
- 1 practice quiz
- 1 graded quiz
- 1 reading
- 14 videos

Week 3

MODULE 5: Software (2 hours 53 minutes total module time)

In the fifth module of this course, learners will explore computer software. They will learn what software actually is and the different types of software they may encounter as an IT Support Specialist. They will also explore how to manage software and revisit the concept of "abstraction." Finally, learners will use the hands-on lab environment to install, update, and remove software on both Windows and Linux operating systems.

Module items

- 1 discussion prompt
- 2 hands-on labs
- 1 practice quiz
- 1 reading
- 10 videos

MODULE 6: Troubleshooting (3 hours 7 minutes total module time)

In the final module, learners examine the importance of troubleshooting and customer support. They'll go through some real-world scenarios that they might encounter in a Help Desk or Desktop Support role. They'll also learn why empathizing with users is critical when working in a tech role. Finally,

learners will learn why writing effective documentation is an important aspect of any IT role. By the end of this module, learners will be able to utilize soft skills and write documentation in order to communicate effectively with others.

Module items

- 1 discussion prompt
- 3 practice quizzes
- 1 graded quiz
- 2 readings
- 22 videos

COURSE 2: The Bits and Bytes of Computer Networking

This course is designed to provide a full overview of computer networking. Learners will explore topics ranging from the fundamentals of modern networking technologies and protocols to an overview of the cloud to practical applications and network troubleshooting.

Week 4

MODULE 1 Introduction to Networking 4 hours 30 minutes total module time In the first module of this course, learners will explore the basics of computer networking. They will review the TCP/IP and OSI networking models and how the network layers work together. They will also cover the basics of networking devices such as cables, hubs and switches, routers, servers, and clients. Learners will also explore the physical layer and data link layer of our networking model in more detail. By the end of this module, learners will understand how all the different layers of the network model fit together to create a network.

Module items

- 1 discussion board
- 4 practice quizzes
- 2 graded quizzes
- 2 readings
- 15 videos

MODULE 2: The Network Layer (3 hours 49 minutes total module time)

In the second module of this course, learners will explore the network layer in more depth. They will review the IP addressing scheme and how subnetting works. They will explore how encapsulation works and how protocols such as ARP allow different layers of the network to communicate. Learners will also cover the basics of routing, routing protocols, and how the internet works. By the end of this module, learners will be able to describe the IP addressing scheme, understand how subnetting works, perform binary math to describe subnets, and understand how the internet works.

Module items

- 1 discussion prompt

- 3 practice quizzes
- 2 graded quizzes
- 3 readings
- 17 videos

Week 5

MODULE 3: The Transport and Application Layer (4 hours 19 minutes total module time)

In the third module of this course, learners will explore the transport and application layers. By the end of this module, learners will be able to describe TCP ports and sockets, identify the different components of a TCP header, show the difference between connection-oriented and connectionless protocols, and explain how TCP is used to ensure data integrity.

Module items

- 2 practice quizzes
- 2 graded quizzes
- 1 reading
- 11 videos

MODULE 4 Networking Services 4 hours 34 minutes total module time In the fourth module of this course, learners will explore networking services. They will review why we need DNS and how it works. They will also learn why DHCP makes network administration a simpler task. By the end of this module, learners will be able to describe how DNS and DHCP work, how NAT technologies help keep networks secure, and how VPNs and proxies help users connect and stay secure.

Module items

- 2 discussion prompts
- 5 practice quizzes
- 2 graded quizzes
- 1 reading
- 15 videos

Week 6

MODULE 5 Connecting to the Internet 4 hours 1 minute total module time In the fifth module of this course, learners will explore the history of the internet, how it evolved, and how it works today. They will review the different ways to connect to the internet through cables, wireless and cellular connections, and fiber connections. By the end of this module, learners will be able to define the components of WANs and outline the basics of wireless and cellular networking.

Module items

- 1 discussion prompt

- 4 practice quizzes
- 2 graded quizzes
- 5 readings
- 15 videos

MODULE 6 Troubleshooting and the Future of Networking 4 hours 3 minutes total module time In the last module of this course, learners will explore the future of computer networking. They will also learn the practical aspects of troubleshooting a network using popular operating systems. By the end of this module, learners will be able to detect and fix many common network connectivity problems using tools available in Microsoft Windows, MacOS, and Linux operating systems.

Module items

- 1 discussion prompt
- 4 practice quizzes
- 2 graded quizzes
- 2 readings
- 15 videos

COURSE 3: Operating Systems and You: Becoming a Power User

Through a combination of video lectures, demonstrations, and hands-on practice, this course will teach learners about the main components of an operating system and how to perform critical tasks like managing software and users and configuring hardware.

Week 7

MODULE 1 Navigating the System 6 hours 23 minutes total module time In the first module of this course, learners will discover the basics of Windows and Linux operating systems (OSs). They will explore how directories and files work in Windows and Linux OSs. Learners will also learn practical ways to manipulate files and directories in the Windows graphical user interface (GUI), Windows command line interface (CLI), and Linux shell. By the end of this module, learners will interact with files and directories and perform basic text manipulation in Windows and Linux OSs.

Module items

- 2 discussion prompts
- 2 hands-on labs
- 2 practice quizzes
- 1 graded quiz
- 6 readings
- 32 videos

MODULE 2 Users and Permissions 4 hours 7 minutes total module time In the second module of this course, learners will explore configuring users and permissions in Windows and Linux OSs. It's important for learners to know how to grant the appropriate permissions to users and groups for both Windows and Linux OSs. By the end of this module, learners will understand how to add, modify, and remove

users for a computer and for specific files and folders by using the Windows GUI, Windows CLI, and Linux shell.

Module items

- 1 discussion prompt
- 2 hands-on labs
- 1 practice quiz
- 4 readings
- 16 videos

Week 8

MODULE 3 Package and Software Management 5 hours 58 minutes total module time In the third module of this course, learners will explore package and software management in Windows and Linux OSs. It's important for learners to know how package installs work and how devices and drivers are managed within these operating systems. They will also review different packaging and file compression methods. By the end of this module, learners will know how to create, update, and remove software by using the Windows GUI, Windows CLI, and Linux shell.

Module items

- 2 hands-on labs
- 4 practice quizzes
- 1 discussion prompt
- 14 readings
- 16 videos

MODULE 4 Filesystems 4 hours 56 minutes total module time In the fourth module of this course, learners will examine how filesystems work for Windows and Linux OSs. They will review filesystem types and why they're different for certain OSs. They will learn about disk partitioning and virtual memory and why these are so important for an IT Support Specialist. Learners will also cover ways to mount and unmount filesystems, read disk usage, and repair filesystems. By the end of this module, learners will partition and format a disk drive in both Windows and Linux.

Module items

- 1 discussion prompt
- 2 hands-on labs
- 1 practice quiz
- 9 readings
- 16 videos

Week 9

MODULE 5 Leadership and influencing skills 4 hours 29 minutes total module time In the fifth module of this course, learners will explore process management. System tools help IT Support Specialists read and understand process statuses of machines. Learners will cover ways to start and terminate a process in Windows and Linux, and apply troubleshooting tools to solve problems with processes and resources. By the end of this module, learners will use Windows and Linux commands to do practical process maintenance.

Module items

- 1 discussion prompt
- 2 hands-on labs
- 3 practice quizzes
- 8 readings
- 14 videos

MODULE 6 Operating Systems in Practice 4 hours 42 minutes total module time In the last module of this course, learners will understand some of the practical aspects of operating systems that they will use often in IT Support. They will discover remote access and how to troubleshoot a computer from afar. They will explore virtualization tools to manage and remove virtual instances, use logs for system monitoring, and demonstrate a few different techniques for OS deployment. By the end of this module, learners will apply all the skills from this course to debug issues within Windows and Linux OSs.

Module items

- 3 discussion prompts
- 2 hands-on labs
- 2 practice quizzes
- 6 readings
- 17 videos

COURSE 4: System Administration and IT Infrastructure Services

In this course, learners will learn about the infrastructure services that keep all organizations—big and small— functioning smoothly. Learners will explore the cloud in order to understand everything from typical cloud infrastructure setups to how to manage cloud resources. They will also learn how to manage and configure servers and how to use industry tools to manage computers, user information, and user productivity. Finally, they will learn how to recover an organization's IT infrastructure in the event of an emergency.

Week 10

MODULE 1 What is System Administration? 3 hours 14 minutes total module time In the first module of this course, learners will cover the basics of system administration. Learners will review organizational

policies, IT infrastructure services, user and hardware provisioning, routine maintenance, troubleshooting, and managing potential issues. By the end of this module, learners will understand the roles and responsibilities of a System Administrator.

Module items

- 2 practice quizzes
- 1 graded quiz
- 2 readings
- 16 videos

MODULE 2 Network and Infrastructure Services 6 hours 16 minutes total module time In the second module of this course, learners will review network and infrastructure services. Learners will learn what IT infrastructure services are and what their role is in system administration. They will also explore server operating systems, virtualization, network services, DNS for web services, and how to troubleshoot network services. By the end of this module, learners will be familiar with the most common IT infrastructure services they will encounter when handling system administration tasks.

Module items

- 3 hands-on labs
- 5 practice quizzes
- 6 readings
- 1 graded quiz
- 23 videos

Week 11

MODULE 3 Software and Platform Services 4 hours 35 minutes total module time In the third module of this course, learners explore software and platform services. They will learn what types of software and platform services they may encounter in a tech role and how to manage them. They will review how to configure email services, security services, file services, print services, and platform services. Learners will explore ways to troubleshoot platform services and common issues to look out for. By the end of this module, learners will understand how to set up and manage the IT infrastructure services to help a business stay productive, keep information secure, and deliver applications to its users.

Module items

- 1 hands-on lab
- 4 practice quizzes
- 1 graded quiz
- 10 readings
- 16 videos

MODULE 4 Directory Services 6 hours 34 minutes total module time In the fourth module of this course, learners will explore directory services. Specifically, they will learn how two of the most popular directory services, Active Directory and OpenLDAP, work in action. They will explore the concept of

centralized management and how this can help System Administrators maintain and support all the different parts of an IT infrastructure. By the end of this module, learners will know how to add users and passwords and use group policies in Active Directory and OpenLDAP.

> Module items
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> - 1 hands-on lab
> - 4 practice quiz
> - 11 readings
> - 1 graded quiz
> - 19 videos

Week 12

MODULE 5 Data Recovery & Backups 2 hours 41 minutes total module time In the fifth module of this course, learners will learn about data recovery and backups. They will also review common corporate practices like designing a disaster recovery plan and writing post-mortem documentation. By the end of this module, learners will know the trade-offs between on-site and off-site backups, understand the value and importance of backup and recovery testing, know different options for data backup (as well as the risks), and understand the purpose and contents of a disaster recovery plan.

> Module items
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> - 1 discussion prompt
> - 2 practice quizzes
> - 1 graded quiz
> - 3 readings
> - 12 videos

MODULE 6 Final Project (2 hours 14 minutes total module time)

The last module of this course is dedicated to the final project. For the final project, learners will apply all the skills they've learned in this course by providing systems administration consultation. They will assess the IT infrastructure of three fictitious (but real-life based) companies, and provide recommendations and advice about how to support their IT infrastructure. By the end of this project, learners will demonstrate the skills and problem-solving techniques of a System Administrator.

> Module items
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> - 1 graded quiz
> - 1 reading

COURSE 5: IT Security: Defense Against the Digital Dark Arts

This course covers a wide variety of IT security concepts, tools, and best practices. It introduces threats and attacks and the many ways they can show up. Learners discover encryption algorithms and how they're used to safeguard data. Then, they learn about the three As of information security: authentication, authorization, and accounting. This course also covers network security solutions,

ranging from firewalls to Wi-Fi encryption options. To complete the course, learners create a multi-layered security architecture, followed by recommendations on how to integrate a culture of security into an organization or team.

Week 13

MODULE 1 Understanding Security Threats (3 hours 39 minutes total module time)

In the first module of this course, learners will explore the basics of security in an IT environment. They will learn how to define and recognize security risks, vulnerabilities, and threats. They will identify the most common security attacks in an organization and understand how security revolves around the "CIA" principle. By the end of this module, learners will know the types of malicious software, network attacks, client-side attacks, and essential security terms they will see in the workplace.

Module items

- 1 discussion prompt
- 1 graded quiz
- 3 practice quizzes
- 3 readings
- 10 videos

MODULE 2 Pelcgbybtl (Cryptology) (5 hours 51 minutes total module time)

In the second module of this course, learners discover cryptology. They will explore different types of encryption practices and how they work. The module also shows them the most common algorithms used in cryptography and how they've evolved over time. By the end of this module, learners will understand how symmetric encryption, asymmetric encryption, and hashing work. They will also learn how to choose the most appropriate cryptographic method for a scenario they may see in the workplace.

Module items

- 2 hands-on labs
- 4 practice quizzes
- 1 graded quiz
- 9 readings
- 13 videos

Week 14

MODULE 3 AAA Security (Not Roadside Assistance) (2 hours 42 minutes total module time)

In the third module of this course, learners will explore the "three A's" in cybersecurity. No matter what type of tech role they are in, it's important to understand how authentication, authorization, and accounting work within an organization. By the end of this module, learners will be able to choose the most appropriate method of authentication, authorization, and level of access granted for users in an organization.

Module items

- 2 practice quizzes
- 1 graded quiz
- 2 readings
- 14 videos

MODULE 4: Securing Your Networks (4 hours 26 minutes total module time)

In the fourth module of this course, learners cover secure network architecture. They'll learn about some of the risks of wireless networks and how to mitigate them. They also cover ways to monitor network traffic and read packet captures. By the end of this module, learners will understand how VPNs, proxies, and reverse proxies work; why 802.1X is important for network protection; understand why WPA/WPA2 is better than WEP; and know how to use tcpdump to capture and analyze packets on a network.

Module items

- 1 hands-on lab
- 3 practice quizzes
- 1 graded quiz
- 2 readings
- 11 videos

Week 15

MODULE 5: Defense in Depth (2 hours 18 minutes total module time)

In the fifth module of this course, learners will go more in depth into security defense. They will explore ways to implement methods for system hardening, application hardening, and determine the policies for OS security. By the end of this module, learners will know why it's important to disable unnecessary components of a system, learn about host-based firewalls, set up anti-malware protection, implement disk encryption, and configure software patch management and application policies.

Module items

- 2 practice quizzes
- 1 graded quiz
- 3 readings
- 9 videos

MODULE 6: Creating a Company Culture for Security (5 hours 7 minutes total module time)

In the last module of this program, learners will explore ways to create a company culture for security that meet the three goals of security. By the end of this module, learners will develop a security plan for an organization to demonstrate the skills they've learned in this course.

Module items

- 1 discussion prompt
- 3 practice quizzes
- 2 graded quizzes
- 9 readings
- 15 videos