

GENESIS ITU

CompTIA A+ Fundamentals

Hardware, software, troubleshooting & professional IT support

College-style student textbook & workbook · Clean · Practical · Professional

Zarco AI Systems LLC · Genesis ITU

How to use this book

Read each chapter in order. Learn formal definitions the way employers and exams use them. Complete pause-and-review prompts. Use only authorized lab systems. This course teaches lawful, professional practice.

Table of Contents

- Chapter 1 — IT support mindset & safety
- Chapter 2 — Motherboards, CPUs, and memory
- Chapter 3 — Storage & file systems
- Chapter 4 — Operating systems
- Chapter 5 — Networking for support
- Chapter 6 — Security basics
- Chapter 7 — Troubleshooting methodology
- Chapter 8 — Professionalism & next steps

Chapter 1 — IT support mindset & safety

A+ is the foundation of hands-on IT support: identify hardware, install software, troubleshoot methodically, and communicate professionally.

Follow electrical safety, ESD precautions, and policy. Document every change.

ESD

Electrostatic discharge — static that can damage components. Use proper handling and straps where required.

Pause and review. Name three safety habits before opening a PC.

Chapter 2 — Motherboards, CPUs, and memory

The motherboard connects CPU, RAM, storage, and expansion. Form factors must match the case.

RAM is volatile. Match generation and speed to the board.

BIOS/UEFI

Firmware that initializes hardware before the operating system loads.

- Verify CPU socket compatibility
- Reseat RAM for no-POST issues
- Update firmware only from vendor sources

Chapter 3 — Storage & file systems

HDDs use platters; SSDs use flash and are typically faster.

NTFS is common on Windows. Understand partitions and that delete is not always permanent wipe.

S.M.A.R.T.

Drive health monitoring indicators.

Pause and review. *When would you choose SSD over HDD?*

Chapter 4 — Operating systems

Support Windows and basic macOS/Linux familiarity. Practice installs, drivers, and accounts.

Know Task Manager, Event Viewer, Disk Management, and Safe Mode.

- Verify install media
- Apply updates after install
- Create recovery options when policy allows

Chapter 5 — Networking for support

IP basics, DNS, DHCP, Wi-Fi, and SOHO routers at support depth.

Tools: ipconfig, ping, tracert.

DHCP

Service that automatically assigns IP configuration on a network.

Pause and review. List steps for a laptop with no internet.

Chapter 6 — Security basics

Physical security, authentication, malware awareness, and safe habits protect users.

Social engineering

Manipulating people for access or information; phishing is common.

Chapter 7 — Troubleshooting methodology

Identify problem → theory → test → plan → implement → verify → document. Change one variable at a time.

Pause and review. *Write the troubleshooting steps from memory.*

Chapter 8 — Professionalism & next steps

Clear tickets and respect for user data define good support. After A+: Network+, Security+, or specialty roles.

Closing

Review every formal definition before practice exams. Continue with labs, instructor video when available, and job-path practice on NodePath or REACH. Genesis ITU wishes you steady progress.

Genesis ITU · Educational use · Authorized systems only