ENTRY-LEVEL COMPUTER ENGINEERING TECHNICIAN

Definition: An entry-level computer engineering technician troubleshoots, installs, modifies, and tests hardware, software, and networks used in business and industry.

A. COMMUNICATION SKILLS

A.1 Ask and answer questions effectively
A.2 Demonstrate active listening skills
A.3 Demonstrate appropriate use of telephone and email; e.g., netiquette
A.4 Track, produce, and interpret documentation
A.5 Demonstrate interpersonal and leadership skills
A.6 Write and speak in technical and/or layman's terms appropriate to the audience
A.7 Use communication tools; e.g., fax, conferencing, scanner

B. CUSTOMER RELATION SKILLS

B.1 Interface with internal and external customers; i.e., vendors, clients, peers
B.2 Provide regular feedback regarding progress of work
B.3 Develop positive relationship with customers
B.4 Practice negotiating skills
B.5 Demonstrate respect for the individual
B.6 Deal effectively with varied personalities
B.7 Implement solutions to meet customer needs
B.8 Apply stress management techniques
B.9 Demonstrate global awareness; e.g., language, technologies, and cultures

C. TEAMWORK

C.1 Interface with team members; i.e., vendors, clients, peers
C.2 Participate effectively as a team member; e.g., meetings and daily work
C.3 Practice negotiating skills
C.4 Ask for assistance
C.5 Fulfill commitments and assignments for team projects
C.6 Utilize skills and knowledge of team members

D. TIME MANAGEMENT

D.1 Set goals and priorities
D.2 Set and meet schedules
D.3 Demonstrate accountability for time spent
D.4 Use unassigned time effectively
D.5 Perform work in an efficient manner; e.g., use personal and project management tools

E. BASIC HARDWARE

E.1 Demonstrate working knowledge of the internal components of a system; i.e., CPU, memory, buses, storage devices, I/O devices
E.2 Demonstrate working knowledge of external components of a system; e.g., modems, scanners, flash drives, and USB hubs
E.3 Maintain, troubleshoot, and service print and multifunction devices
E.4 Develop and apply troubleshooting techniques
E.5 Install and/or modify hardware following manufacturer's specifications; e.g., BIOS upgrades

E.6 Practice electrical and personal safety procedures; e.g., electrostatic discharge, voltage awareness, and proper lifting
E.7 Document asset tracking and inventory

F. OPERATINGSYSTEMS

F.1 Demonstrate overview and understanding of functionality of operating systems; e.g., home vs. business
F.2 Demonstrate a working knowledge of commands, utilities, and administration of an operating system; e.g., Windows, UNIX, LINUX, Mac
F.3 Develop and apply troubleshooting techniques
F.4 Install and/or modify operating systems; e.g., drivers, patches
F.5 Demonstrate a familiarity with server operating systems
F.6 Practice industry standards for back up and restoration/disaster recovery

G. SOFTWARE

G.1 Train customer regarding computer and peripherals
G.2 Develop and apply troubleshooting techniques
G.3 Install and/or update software; e.g., service packs and critical updates
G.4 Demonstrate overview and understanding of databases/disaster recovery
G.5 Demonstrate a working knowledge of user software applications; e.g., Microsoft Office (business vs. home)
G.6 Set up PC mirror imaging and distribution
G.7 Understand and apply concepts and procedures for virus and malware protection and eradication

H. BASIC NETWORKING

H.1 Demonstrate overview of LAN/WAN concepts and topologies
H.2 Demonstrate overview of WLAN
H.3 Demonstrate working knowledge of network hardware and software components; i.e., routers, switches, and access points
H.4 Develop and apply basic troubleshooting techniques
H.5 Apply basic understanding of OSI model
H.6 Configure computer to network to access network resources
H.7 Demonstrate a working knowledge of cabling connections and devices
H.8 Understand the concepts of IPB4; e.g., subnetting
H.9 Understand the concepts of IPB6
H.10 Demonstrate an awareness of telephony, AV and cellular integration with the network

I. INTERNET ENVIRONMENT

I.1 Navigate web to locate and acquire information, manufacturer support documentation, drivers, patches, and updates
I.2 Apply understanding of TCP/IP protocols and tools
I.3 Demonstrate an understanding of email client software; SMTP, POP3, IMAP, Exchange
I.4 Demonstrate a working knowledge of DNS, HTTP, FTP, HTTPS
I.5 Understand the role of certificates and SSL
I.6 Understand different internet browser and plug-ins

J. SECURITY

J.1 Implement appropriate WLAN for industry standard
J.2 Perform regular operating system updates
J.3 Follow industry standards for security and confidentiality
J.4 Understand common criteria certification
J.5 Install, update, and maintain firewall/security

K. PREVENTIVE MAINTENANCE

K.1 Perform scheduled inspections
K.2 Collect and interpret data (including diagnostics) and event logs
K.3 Make equipment or component adjustments/calibration; e.g., cleaning
K.4 Record and document action taken

BASIC SKILLS AND KNOWLEDGE

Be aware or Awareness
Common criteria standard
Communicate to laymen/technicians
Customer relations
Evaluate
Grammar
Graphic Manipulation
Instill confidence
Listening
Observing
Research
Thinking before speaking
A+
Citrix
Compression Software
Computer hardware (laser printers, network cards, system boards, memory, fans)
DHCP
Disaster recovery
Drivers
Firewalls
HTTP
NAS
Network
Operating systems (Vista, XP, Windows)
DNS
POP3
Remote access
SMTP
Sniffers
Storage area network
Switching
TCP/IP
Terminal servers
Virtual servers
VPN
WebDAV
WINS

DESIRABLE WORKER BEHAVIORS/TRAITS

Dependable
Detail oriented
Dress appropriately
Embrace change
Follow directions
Love of technology
Open-minded
People oriented
Persistent
Resilient
Self-starter
Thick skinned
Work independently

ACRONYMS

AV	Audio Visual
BIOS	Basic Input Output System
CPU	Central Processing Unit
DNS	Domain Name Service
FTP	File Transfer Protocol
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Security
IMAP	Internet Message Access Protocol
I/O	Input/output
IP	Internet Protocol
IPV	Internet Protocol Version

DACUM PARTICIPANTS

Panelists

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